

## Engineering employers emphasise the practical

by Sue Reid

An expansion of practical university engineering courses is being demanded by the Engineering Employer's Federation in confidential evidence to the Finston inquiry.

The evidence claims that more able recruits would be attracted into the engineering profession if more practical and integrated engineering courses were introduced and a better career structure in industry promoted.

The EEF has told the Finston inquiry that it is examining the engineering profession, and the engineering course provides the right kind of education and training that is most useful to industry.

"It is largely based on blind industrial experience with academic training."

In a controversial move the Federation has also argued that chartered engineer status should be available to engineers with a wider range of academic qualification than at present—now just confined to a degree but to include higher national certificates, diplomas and their replacements currently being designed by the Technician Education Council.

The present system in certain engineering institutions of having two grades of members—chartered engineer and technician engineer—is to be dropped, claims the EEF.

"The inference is that there is a second grade citizen and this will detract considerably in the initial environment of competent people in

the technician ranks, some of whom may well, in time, be suited to become chartered engineers."

The Federation regrets the blocking of the old route to the members of the professional institutions through the ONC and HNC courses and believes that this should be reopened through the TUC.

The Federation, whose evidence concentrates on the problems facing the manufacturing industry, also alleges that many pupils who might have followed this route now entered higher education to read other subjects. The loss to the engineering industry was apparent not only among those who qualified but those who discontinued their studies at ONC or HNC but had in the past remained in the industry to become valuable middle management recruits.

On attracting high level recruits the evidence says: "A major problem is to attract enough people of ability into engineering studies. The new total technology courses and those offered by the 'centres of excellence' set up by the Universities Grants Committee may help to solve this."

Finally it points out: "In the past manufacturing industry must have done much research in its own, especially in fields such as armaments and nuclear engineering. The fact that this has now shifted to the public sector and to the research associations is probably one reason why many of the best brains no longer enter manufacturing industry."



Mrs. Williams, Secretary of State for Education and Science, and Lord Dunsford, Minister for the Arts, view a model of the new British Library building.

## £74m first stage of new British Library starts next year

by Patricia Santinelli

The long-awaited construction of the new British Library in Boston Road is to go ahead from next year at an initial cost of £74m, Mrs. Williams, Secretary of State for Education and Science, announced this week.

The need for the new building, which is to cost £16m over 10 years, has become urgent as many of the present libraries are literally bursting at the seams.

For some time the library has been operating under severe limitations because of inadequate space which has led to the storage of millions of books 10 miles away in Woolwich and to increasingly unsatisfactory conservation conditions.

The need for a new building was first agreed in 1951 and a site designed in Bloomsbury. However, this encountered increasing difficulties over the redevelopment and disturbance involved and led to

a feasibility study with recommendations to build in Somers Town, London.

One of the greatest advantages of the new building which is to cover nearly 10 acres is that it will rationalise and bring together the currently fragmented parts of the British Library.

The new site is to house the bibliographic services division, the reference library which includes the present libraries, the Library Association library and the British Library Board. It will also provide room for national museums and art galleries.

It will bring together for the first time humanities and science giving 3,500,000 books and documents access to 25 million books.

However, completion of the first stage in 1980 will only be a stop gap measure and unless something is done to speed up the redevelopment, the library will continue to face storage and deterioration problems.

## Economics unit for Imperial College

Imperial College, London University's largest science and engineering institution, is to set up a department of social and economic studies next year consisting of the existing industrial sociology unit and a new economics unit.

The move follows a review started in 1975 to consider what subjects other than natural and engineering sciences should be developed at the college. It recommended creating a chair of economics supported by three or four academic staff to form an economics unit.

Professor Dorothy Wedderburn, director of the industrial sociology unit, has been appointed head of the new department. Mr. Z. A. Silberston, fellow of Nuffield College, Oxford, has been appointed to the economics chair.

The new department is expected to carry out a substantial programme of interdisciplinary research as well as contributing to the undergraduate and postgraduate engineering and science courses.

Imperial College has been nominated by the University Grants Committee as one of the university centres to offer selected students elite four-year engineering courses.

## Industrial link for Oxford

New four-year honours courses in engineering and metallurgy—both linked with the study of economics and management—are to be set up at Oxford University.

An important feature of both courses will involve organised periods of industrial work for students and a final-year project—undertaken under supervision and a six-month industrial attachment—will be used in assessing degree results.

The move to set up the new school follows a call from the University Grants Committee for the need for innovation in the education of engineers in preparation for careers in manufacturing industry.

Oxford University was asked to submit proposals for a four-year undergraduate course "of very high quality with a pronounced orientation towards the manufacturing industry" and the plan has now been approved by the UGC.

The committee said it strongly favoured the Oxford courses and has assured the university of special support for the first four years, both for the cost of setting up the courses and for the establishment of additional academic posts required for them.

## OU drops its 'lowest pass' course

by Robin McKie  
Science Correspondent

The problem-plagued engineering mechanics course of the Open University is to be dropped completely next year, despite earlier plans to overhaul it.

The course, which has had the lowest pass rate of any OU course, will now be replaced by a new rewritten course in 1980.

The move follows differences of opinion between staff in the engineering mechanics department and other members of the faculty of the revision work which was undertaken. It had been feared to offer part of the revised course as a new half-credit, the discipline rejected this.

The rewriting work, from specialist lecturers, has been completed but now the engineering mechanics group have decided the results were not satisfactory. Dr. John Cunniff, senior lecturer and former chairman of the T21 course team, said the revision group had been working for almost a year on the new but had only done a very small part of the necessary rewriting.

"They had only done the first drafts and one second draft of these are 16 course units," he said. "We were very disappointed."

The T21 course was first introduced in 1975 when the pass rate was 78 per cent. The following year it plunged to 48 per cent and when there was a similar drop in 1977, Professor J. S. Sturges, dean of technology, set a revision team made up of lecturers and members of the discipline to rewrite the course for 1979.

The aim was not to change the course but to make it more educationally effective," Professor Sturges said. "This will be done for the course in 1980."

Professor Geoffrey Holroyd, acting head of the engineering mechanics department, said he and his colleagues were disappointed that the revision work was unsatisfactory.

"We felt we had got on our own because of the ineffectiveness of the course already and did not want to rush through, when it was still not ready and get even more on our face."

"We are not being blood-minded pedants, trying to get things absolutely right. We want the course to be a success, and taking something out of circulation for a year is not enough unless it gives us an unqualified disaster."

Five polytechnics have been selected by the Government to offer specialist management-orientated engineering degrees alongside nine universities.

Manchester, Portsmouth, North East London, Shiffield and Unifield Polytechnics have been chosen to offer the four year degrees, which are geared to manufacturing industry's needs, for their strengths in engineering and related disciplines. They will compete for high calibre students with Oxford, Cambridge, Birmingham, Brunel, Strathclyde, and Manchester universities, the University of Manchester Institute of Science and Technology, Queen's University Belfast, and Imperial College, London.

In a related initiative the DES this week also announced details of its scholarship scheme to encourage students of exceptional ability to enter the world of industry through the engineering and allied professions.

About 100 scholarships, worth £500 a year each, will be offered in the next academic session. Successful candidates will be selected by a special selection committee headed by Mr. Oscar Holm, director of Guest Keen & Neale Ltd, the giant British-based engineering concern.

The DES said that the scholarships will be jointly supported by industry and Government and their right status would be recognized by industry and commerce. The awards would demonstrate to the academic community the high regard in which the study of

## African decision

London University's court will decide next week whether to draw £7m of investments from 20 companies and more than 250 subsidiaries claimed to have a large stake in the South African economy.

A list of the firms and details of their activities are contained in a submission to the court compiled by the students' union. The submission says: "The University of London is a centre of enlightenment and learning, with a multiracial population."

## Next Week

Special report on higher education in America.  
Charles Carter on "the steady state university".  
The Darwin colloquium: laywers and doctors.  
Middlesex Polytechnic structure examined by Judith Judd.  
The future of the University of Rhodesia—the full text of a document by its black academics.

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## Polys picked to do elite degree courses

by Sue Reid

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## SSRC soldiers on with plan for 'British Brookings'

by Peter David

The Social Science Research Council is to persist with plans to establish a £5m "British Brookings" despite this week's merger between two existing institutes to create a Policy Studies Institute of their own.

Mr. Derek Robinson, chairman of the SSRC, said his programme of the Centre for Studies in Social Policy (CSSP) and Political and Economic Planning (PEP) had not changed his view that there was a need for a new sort of institute designed to bring academic expertise to bear on government decision-making.

He pointed out that a SSRC committee last year rejected the idea of creating such an institute by merging existing bodies. Conflicting discussions were still in train to raise "a considerable amount of money for a new institute. The SSRC has already agreed to earmark £2m for a policy studies institute, provided an additional £3m can be raised from private sources."

Mr. Robinson said this week that a "Ford Foundation offer of £1m for the project still stood in British sources could raise enough money to give the institute a guaranteed base for 10 years."

But Sir Monty Phipps, chairman of the newly formed Policy Studies Institute, said the creation of a separate British Brookings would weaken existing institutes.

The PSI is expected to have a total budget next year of more than

£1m. Staff from the CSSP and PEP are to move to new premises in Whitechapel.

A wide field of political, social and economic issues will be studied by the Institute. They include demography, employment, industrial policy, urban planning, social security, equal opportunity, the family, social security and pensions. It also intends to set up a European Centre for Studies in Democratic Politics and an educational policy unit in collaboration with the University of Lancaster.

Sir Charles Carter, Lancaster vice-chancellor and chairman of the Institute's management committee, said the institute might need to grow bigger, but it was more important to concentrate on the quality of research.

Mr. John Pinder, director of PEP, will become director of the new institute. His deputy will be Professor Michael Fogarty, acting head of the CSSP.

The Centre for Studies in Democratic Politics will be run under the aegis of the PSI with a budget of £100,000 and six research staff headed by Professor Roger Morgan, head of European studies at Loughborough University.

Plans for the educational policy unit are less well advanced. The unit is to set up a joint research programme with Lancaster University under a special advisory council. Eventually more than 15 researchers will be involved in major studies of the impact of demographic changes and the aftermath of comprehensive school reorganization.

## Lecturers get guide against racism

by Muggie Richards

A positive stand on racism is being taken by the national executive of the National Association of Teachers in Further and Higher Education, which this week issued to its members a five-point guide for tackling incidents in colleges and polytechnics.

Last Saturday the executive also voted overwhelmingly to urge local officials to take action to restrict the use of higher education institutions by racistist groups.

The guide has been compiled by members of the association's new race relations working group, which was established in February. The guide was adopted by the executive at Saturday's meeting.

The committee sets out five guidelines for NATFHE members to follow if they encounter racistist material:

1. Members should immediately contact the association branch secretary who, with another branch official, should present the offending literature to the principal and request that the local education authority be informed.
2. The NATFHE branch should discuss the issue at the earliest possible moment. Contact should be established with the local liaison committee, regional officials and NATFHE local office.
3. The principal should be asked to prohibit distribution of the material involved. Advice is also given if staff, students or members of the public are involved.
4. If it is believed on offence of incitement to race hatred has been committed, contact with the police should be made through the local liaison committee. Members are advised to contact head office if it is intended to report the case to the Director of Public Prosecutions or the Commission for Racial Equality.
5. The liaison committee or branch officials should have talks on restricting the use of buildings by organisations expressing racistist views to the legal obligations involved in local and parliamentary elections.

The final point was also included in a motion put before Saturday's meeting of the NATFHE executive. The motion, which was agreed, re-affirmed the association's determination to oppose discrimination in education and reiterated its opposition to all forms of racism.

In approving the motion, the executive also adopted the guidelines, and advised liaison committees and branches to begin negotiations on restricting the use of premises.

Mr. Mick Forley, chairman of the association's new race relations working group, said there were sound reasons for producing a guide.

"Quite clearly the National Front sees young people, particularly the 16 to 19-year-olds, as potential recruits to its organization, and that is a matter of great concern to us," he said.

In the latest edition of the NATFHE Journal Mr. Forley writes about the issue and urges all further education teachers to oppose organizations which aim to promote racial hatred.

The Government has asked for a pause in negotiations with university teachers while it examines the effects the recognition of their pay anomaly would have on other pay settlements. It has also reaffirmed its promise that the anomaly will be put right. An emergency committee of the Association of University Teachers meets in private in London tomorrow to discuss this development.

## Claim held up again

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## Scots to press for more working class students

The Association of University Teachers in Scotland is planning to press the Government to take steps to increase the proportion of working class students entering university.

A meeting of the AUTE's council in Edinburgh last weekend passed a motion calling on the Government to make adequate resources available at school level to encourage pupils from a "manual worker background" to go on to university.

Proposing the resolution, which will now be considered by the Scottish AUTE's executive, Mr. Maurice Green, of Strathclyde University, claimed that the number of manual workers entering university was not in dispute. The concern surrounded students from working class backgrounds who left school and did not try for university. Students at university did not reflect the potential that existed.

He maintained that the solution did not lie with the universities but that the AUTE could play a part in persuading the Government to increase its commitment to primary and secondary education.

An announcement urging the inclusion of financial aid in the curriculum of Scotland's tradition of

university education "unhindered by class barriers" was defeated by a two to one majority.

The meeting also referred a second motion demanding a special conference to consider the present and future role of universities in Scotland. Mr. David McNamara, of Glasgow University, proposed it, alleging that the west of Scotland presented a picture of the "archetypal Burn slum" and many students from this background suffered a cultural shock on entering university.

Mr. Malcolm Riffkind, Conservative MP for Edinburgh Pentlands, praised the AUTE's "extreme and extreme" in pursuing the rectification of their salary anomaly created by the Government's pay policy. He maintained that the agreement reached between the Government and the firm could prove favourable to the AUTE.

Mr. Riffkind backed the AUTE's position on devolution. The universities' future was drawn from throughout the United Kingdom and from overseas and this distinction had always been recognized.

He said it would be advisable for universities to try to reverse the trend of financial dependence on central government.



Mr Ray Jenkins, president of the Commission of European Communities, has officially opened Newcastle Polytechnic's new nine storey library building, left, which includes a European Documentation Centre. Mr Jenkins, pictured above, inspected the facilities after the official opening with Professor Keith Harris, the polytechnic librarian (left), and Council Derek Webster (right), chairman of the polytechnic council.

## Marxists now 'infiltrating' reading lists

by Owen Surridge

Reading lists at universities and polytechnics are being shaped to promote the viewpoint of the extreme left-wing, according to Professor Brian Cox of Manchester University. He told a meeting of the National Council for Educational Standards in London on Sunday that Marxists running courses were passing away by their reading lists.

Warning that Marxists had begun to infiltrate the universities in a new way, by way of their literature, the professor said the left would always try to present their case by arguing that we lived in a period of pre-revolutionary change.

The idea of crisis was a recurring phenomenon with the left. The moment one of their ideas is proved wrong they will immediately find another, leading to the idea that we have to get out of the situation by something extreme, even violent. It was a most dangerous tactic and very popular with Marxists running courses.

Their influence was often felt large in their course reading lists, he said, which ignored the literature that did not support their own point of view. "There is, in fact, plenty of material of getting the young in trouble."

Claiming that this same was also true to some extent of the Certificate of Secondary Education, Professor Cox said the trend towards teacher controlled examinations should be resisted. The real need was for more externally controlled examinations, where traditional values were more likely to be upheld.

The worrying thing was that non-Marxists had moved into the vacuum left by others' abnegation of authority. "We have to fight for multi-controlled education."

Professor Julius Gould, of Nottingham University, made a vigorous rebuttal of criticisms levelled against his report, *The Attack on Higher Education*, which claimed to expose the extent of left-wing infiltration. Among the most telling counter-blasts, he said, was the admission from Professor A. H. Halsey that during the 1960s it was impossible for those who were not Marxists to get a job in some academic circles.

He said the inquiry drawn by the report was to be expected. It called only for vigilance, for what is lawful may also be educationally and politically obnoxious.

## Put more beef into practical side, business conference told

by Robin McKie

Radical proposals for improving relations between higher education and industry were put forward last week by Professor David Weir, then a member of the Finlinton committee, to the education of manufacturing engineers. Spoken at a "Business Scotland" conference in Glasgow, Professor Weir said both sides failed to have realistic expectations of each other's requirements.

"When we look at education as a basic need, we tend to think of it as a breakfast to the business day. We should consider it as a balanced diet throughout the day instead," he said.

The criticism of the way education was run was followed through from school to college without breaks for students to appreciate the practical applications of their learning. He proposed that people should be prevented from going straight from school to university and that there should be a minimum entry age of 21 years for students joining graduate courses.

Professor Weir said such breaks would allow students to reorganise their courses and perhaps change the direction of their studies. Many had changed courses when they returned to complete their studies. The then University was an excellent example which allowed such an integration of practical and theoretical learning and Professor Weir hoped that the day when many undergraduate training was carried out through the OUE.

The institutional side which

allowed people to flourish in positions in either education or business had a deep effect on national life and individual pride, he added. "If you planted what you learned or could contribute to a job, after five years there would be a greater rapid decay. It is very hard to have school teachers who never worked in industry, and business managers who should also be afforded the chance of teaching."

There should be strong pressure to prevent a job being held for more than five years, he said, and a career path for failing to attempt an understanding of each other's problems. In particular, he accused other speakers of the "artificiality of talking 'past' each other."

Mr. Alan Devenish, managing director of Sotras Ltd, second the school of producing new people who can add up, and then cannot write and so on. He criticised the way in which the school of producing new people who can add up, and then cannot write and so on.

Predictably, the way rejected the educationists, particularly by Mr. John Paddock, general secretary of the Educational Institute of Scotland, who said the increased opportunities and achievement of education had reached its peak. He said that the growth of universities was in the past, and that they had taken on employment in both offices, or in apprenticeships.

"If employers, in the business world are having to take employees of lower ability than in the past, this in itself does not justify the kind of criticisms which have been levelled."

## MSC maps path for youth awards

A scheme to reward young people on the Youth Opportunities Programme with "Pathfinder" certificates is currently being discussed between the Manpower Services Commission and the City and Guilds Institute.

The certificate, which will give a profile of "employability and training" is seen as an added incentive for young people to enter the programme and for employers to offer jobs.

Young people will be assessed by their supervisors and it is hoped, by the further education service as they go through the programme. They will have to demonstrate that they have acquired basic skills and have reached an acceptable education standard.

## New adult research register

A new register of research programmes in adult education has been produced by Mr. C. Derek Legge, former director of the department of adult education at Manchester University. The Register of Research in Progress in Adult Education 1976 and 1977 includes a special section on literacy. The register is published by the Department of Adult and Higher Education at Manchester University.

## London guide to polys and colleges

The latest edition of the Inner London Education Authority's guide to further and higher education courses has been published. More than 12,000 copies of "A Guide to Further and Higher Education in Inner London" have been printed. Details of courses available at polytechnics and colleges, together with information on 400 careers, are given in the booklet, which is available from the Inner London Education Authority, County Hall, London SE1 7PB, price 20p.

## The debate on higher education in Britain into the 1990s gets under way

### APT paper criticizes 'elastic polys' notion

by Peter David

Demographic changes in the next decade could create a crisis in the polytechnics which would make the contraction of the teacher training system look like "a little local difficulty", Dr A. J. Pountney, national secretary of the 4,000-member Association of Polytechnic Teachers, said last week.

"My basic fear is that because polytechnics were designed to be reactive pressures can be put on them which cannot be put on the universities", he said. As a result, polytechnics could be used for all the short-term growth in student numbers, only to find themselves in the same predicament as the colleges of education when numbers fell again in the 1980s.

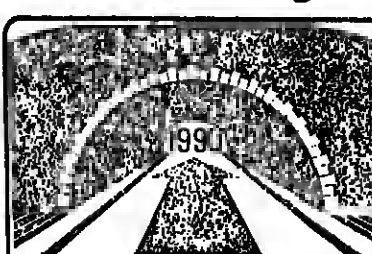
This could be avoided only by coordinating national planning in both sectors, Dr Pountney said. One mechanism would be the national body expected as a result of the Oakes committee's report.

Dr Pountney was commenting on

an initial APT response to the Department of Education and Science discussion paper, *Higher Education into the 1990s*. In its response, the association asks 14 questions of its own to complement the 14 questions posed in the DES document.

The APT document says that universities have a straightforward view of the future. They were in favour of increasing student numbers and against any lowering of standards or shortening of courses. The universities do not seem yet to have considered what happens on the other side of the hill when student numbers may decline; perhaps they tacitly assume that all subsequent contraction will take place in the polytechnics, the paper contends.

Polytechnics would require a substantial increase in income to accommodate large numbers of extra students. One way of coping with expansion would be to reduce undergraduate numbers by providing two-year instead of three-year



courses. "But the universities have stated bluntly that they will not accept such courses as the DiPHE and so any such provision will be in polytechnics or institutes of higher education."

The paper asks whether new DiPHE courses should be developed which did not link with degree or professional courses, and what form such diploma courses would take.

Other questions relate to the problems of retaining the Robbins principle during a period of contraction, and the readiness of polytechnic lecturers to accept changes in their conditions of employment—such as four-year terms to deal with the demographic changes ahead.

This APT's 14 questions have been circulated for debate among polytechnic staffs, and will form the basis of the association's formal response later in the year.

## University entrants in engineering 'are not inferior'

by Sue Reid

Allegations that university entrants to engineering courses are of an inferior quality have been rejected by the Institution of Structural Engineers in evidence to the Finlinton committee of inquiry.

The institution, whose evidence was released this week, maintains that the A level scores of students admitted to engineering courses in 1978 were only marginally lower than for those entering arts and science programmes.

The evidence says: "Much has been said about the supposed inferior average quality of university entrants to engineering courses. This institution believes this to be a false picture."

Many engineering students could do reasonably well at arts subjects but arts students would generally not do so well in science. Much more special mental qualities are needed to obtain an A level in mathematics than most other subjects. The small difference in overall A-level performance should not be assumed to reflect a difference in innate ability.

"When comparing engineering graduates with arts graduates it is also to be remembered that the standards set in engineering courses result in more than 20 per cent of engineering students failing to complete a degree course. The failure rate among art students is of the order of six per cent."

While the quality of graduate entrants to the structural engineering profession was good, continued efforts were needed to ensure that more of them were attracted to it. But at technical engineering level greater numbers were required.

The current changes of further education studies to the awards of the Technician Council and of the Scottish Technical Education Council with the flexibility of opportunity which the courses of the new councils promise may attract larger numbers, the institution predicts.

Commenting on industry's requirements the institution claimed that a sufficient number of civil engineering graduates have been produced in recent years. The production of them specialising in structural engineering matched the construction industry's demands.

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## Professor Carter challenges student number projections

by Judith Judit

A challenge to the Government's projection of student numbers in the 1990s came this week from Sir Charles Carter, vice-chancellor of Lancaster University.

In a newsletter to staff Sir Charles offers his first thoughts on the Government's discussion document *Higher Education in the 1990s*. He says that projections take no account of the higher birthrate among those most likely to send children to higher education and that they assume a reduction in overseas students.

He opposes the idea that higher education should not expand to meet growing student numbers over the next 10 years. "The alternative is to disadvantage people because of an accident of birthdate."

There was little scope for encouraging students to take shorter full-time or part-time courses. Shorter full-time courses would attract students of lower academic qualifications than those at present required. The demand for the Open University and for other part-time

courses does not come to any considerable extent from those who have an option to take a full-time degree.

The suggestion that entry to higher education might be deferred as a means of easing the problems of the 1980s is also rejected. On the question of making better use of existing buildings and resources Sir Charles says that some polytechnics and colleges are overstuffed but staffing levels at Lancaster could not be significantly reduced without affecting the quality of education.

In reply to the twelfth of the discussion document's 14 questions he says that the advantages of giving workers higher education opportunities are obvious. The disadvantages are that someone has to pay to keep students and their families and the damage which may be done to a worker's career by his absence.

Sir Charles warns that the failure of universities to give a considered response to Mrs Williams's 13 points did them no good at all. "Perhaps we should try to do better with the Oakes 14".

## Conference on role of polys

by Maggie Richards

This role of the polytechnics in continuing education is to be examined at a major conference next month.

Speakers at the conference, to be held at Trent Polytechnic, will be Mr Gerry Fowler, former minister for higher education; Mr Keith Hampson, junior Conservative spokesman on education; and Dr Colin Adams, director of the Polytechnic of Central London.

Invitations are being sent to all polytechnic directors, and to representatives of those institutions which already have continuing edu-

cation units. Other organizations being invited to attend include the National Institute of Adult Education, the new advisory council on continuing education, the Open University and the Workers' Educational Association.

The conference, which will be held on April 14, is being organized by Mr Neville Couling of the Centre for General and Extra-Mural Education at Trent Polytechnic.

Details of the conference can be obtained from Mr Couling at The Centre for General and Extra-Mural Education, Trent Polytechnic, York House, Mansfield Road, Nottingham.

## UNIVERSITY OF LANCASTER

### Fourth International Conference on Higher Education Post-Compulsory Education in the 1980s

29 August—1 September 1978

This conference, the fourth in a series of international conferences on higher education, will look ahead to the key issues of the 1980s while at the same time exploring the implications of treating post-compulsory education—i.e. education beyond the statutory school-leaving age—as a single system.

**Plenary Speakers**  
LORD BRIGGS (Worcester College, Oxford); BURTON R. CLARK (Yale University); URBAN DAHLÖF (Uppsala University); LORD VALZEY (Brunel University).

**Working Parties**  
Post-Compulsory Structures: New Organizational Patterns in Comparison and Historical Perspectives. Organized jointly with the Higher Education Research Group, Yale University. Chaired by BURTON R. CLARK (Yale University).

Priorities for the 1980s. Chaired by MICHAEL SHATTOCK, University of Warwick.

Education and Work. Chaired by KLAUS HÖRNER, Pädagogische Hochschule, Berlin. Organized jointly with the Higher Education Research Group, Yale University.

Student Learning: Aims, Processes and Outcomes. Organized jointly with the Institute of Education, University of Gothenburg. Chaired by GERHILD FRAMHEIN, Centre Européen de Coordination de Recherche et de Documentation en Sciences Sociales, Yverdon.

Staff Development: Perspectives for the 1980s. Organized jointly with the Teaching-Learning Centre (Kellogg Project), Illinois State University. Chaired by CHARLES PASCAL, Ontario Universities Program for Instructional Development.

The Role of the Media in Post-Compulsory Education. Chaired by ROGER CARUS, Haverling Technical College. INCLUSIVE RESIDENT FEE: £105 (£90 if paid in full by May 15). Further information contact: Dol Hounsell, Fourth International Conference on Higher Education, The University, Lancaster LA1 4YL.

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## Student teachers reject 'positive discrimination'

by Peter David

Positive discrimination to help minority groups seeking access to higher education is not favoured by a majority of student teachers, according to a survey carried out in a polytechnic.

A questionnaire was administered to 126 students—including 56 graduates and 70 BEd students—in the education department of a polytechnic (which is not named to preserve the anonymity of the respondents).

Two main questions in the survey asked: "Do you think that a policy of differential selection for members of racial minority groups residing in Britain is desirable?" and "On that grounds do you base your views?"

Out of 126 students 97 said they opposed differential selection and 19 were in favour. The remainder did not know. Opposition was stronger among the graduates than the BEd students, but female BEd students showed particular hostility.

Most students gave their reason for rejecting differential selection. BEd students gave this point particular emphasis, possibly because of their own marginality in the higher education system, the author of the survey suggests.

Many respondents expressed concern about the standard of English among minority groups. Besides con-

tributing to a decline in standards, some respondents noted, lack of English was a serious handicap for a teacher.

The second main theme emerging from the survey was anxiety about the justice or fairness of differential selection. One graduate asked: "Should lower grades be accepted for shorter people or those with curly hair?" Another said: "This is discrimination against majority groups."

A third theme in the students' replies suggested that differential selection could increase racial conflict by creating resentment among members of the majority group. One reply said: "In the current political climate favours given to racial minorities at the expense of the racial majority may fuel the fires of racism."

A final group of respondents argued that the idea of differential selection was limited in the concept of equality of opportunity. A typical reply was: "I see no reason why minority groups should be treated differently—whether this be more favourably or less favourably than the rest of the population. This would be in line with my views favouring equality of opportunity for all members of society."

Four out of six students who were themselves members of minority groups opposed differential selection and gave similar reasons.



Aceros Narcondam—the Narcondam Hornbill, British Museum Specimen.

## Imperial up £602,300 but more sought for contract work

by Robin McKie

Science Correspondent

Direct spending on sponsored research at the Imperial College of Science and Technology reached £4,342,000 last year—an increase of £602,300 on the previous year. These figures are revealed in the college's research report for 1974-78 and the report, Sir Brian Flowers, said they were still seeking substantial increases from new University Grants Committee sources with special emphasis on attracting contract research.

He said that last year's figure represented an increase of £1,761,445 spent on sponsored research from the 1971-74 period, the last year covered by their previous triennial report.

Sir Brian said that in the past year, Professor M. B. Fleeming has assumed responsibility for forming an effective focus of information concerning research opportunities in working group comprising a number of senior academic staff and some government to consider means

of increasing our disposable income from outside sources and to involve generally in academic industrial collaboration", he added.

Recent industrial sponsorship at the Imperial College has provided two new chairs—the Kodak chair of interface science in the department of chemistry, and the Centre for chemical engineering and electrical engineering in the department of metallurgy and materials science.

"Another major new development is the recent creation of the Imperial College centre for environmental technology, formed to further the development of academic and research activities in this field. Fifteen of our departments are at present involved in this exciting new collaboration", Sir Brian said.

The development highlighted in the report is the new system which has linked the department of aerodynamics with the college's central computer. The department says this has allowed them to perform experiments which have been previously impossible.

## Poly students hope to get the bird

by Maggie Richards

Four students from North East London Polytechnic are planning an expedition to an uninhabited island in the Bay of Bengal in an attempt to help save a rare species of bird from extinction.

The students hope to launch an expedition to Narcondam, one of the 204 islands which make up the Andaman archipelago, in August. Their aim will be to conduct research into the Narcondam hornbill. It is believed less than 30 birds now exist, because of destruction of the island's forest by the timber industry.

To ensure the hornbill's survival has become vital to know about the bird.

During their stay on the islands, the members of the North East London Polytechnic team will be studying the number of birds, studying their diet and feeding behaviour, and making observations of nest sites and territories. An assessment of the ecological importance of the island will also be made. The team intend to publish its findings in a paper.

Sponsors are now being sought for the trip, which will cost £2,000. The students are also asking to hear that they have been granted permission to visit Narcondam.

## Anthropology in our time

Middlesex Polytechnic has set up a new research unit designed to link anthropological methods with the polytechnic's strong research interests in criminology and sociology.

The Centre for Occupational Studies, headed by Dr Gerald May, has already attracted two Social Science Research Council grants and five doctorate applications in the pipeline.

## Supreme Court rules on expulsion rights

from Clive Cookson

WASHINGTON

Courts are particularly ill equipped to evaluate academic performance. Ironically, the subject of the case was, in a certain sense, academically brilliant. Miss Horowitz was accepted by the University of Missouri's medical school in Kansas City with a Master's degree in psychology from Columbia University, and came near the top in the school's admission test.

The university agreed that her written work remained excellent. But, the school maintained, her performance on the clinical course was unsatisfactory, because she had no interest in cultivating a good bedside manner.

She claimed the school was prejudiced because she was female, Jewish, overweight and of a physical appearance some found unattractive.

However, the Supreme Court ruled that her deficiencies were, in the context of a medical school, academic. "Personal hygiene and timeliness may be as important as whether a student will make a good doctor as the student's ability to take a case history or diagnose an illness," it said.

Women's and civil liberties groups backed Miss Horowitz. They said that, in the court's verdict, judicial interference in academic judgments should not have been an issue, as she clearly faced charges of personal misconduct rather than academic deficiencies.

Miss Horowitz's lawyer said the majority opinion seemed to give medical schools unbridled discretion in dealing with students—by attaching an "academic" label to any reason for expelling someone, a school could insulate itself from a judicial review of the propriety of the decision.

## Black colleges launch drive to boost standards

from Our Own Correspondent

WASHINGTON

America's independent black colleges have committed themselves to make a common effort to raise their academic standards.

The presidents of the 41 member institutions of the United Negro College Fund (UNCF) have agreed on an action programme which, they hope, will bolster their academic standing without abandoning their traditional role of providing special help and encouragement for black students whose schools did not prepare them adequately for university education.

The new standards include: a pre-graduation proficiency examination for students with less than a B average in English; compulsory pre-entry courses in mathematics and communications skills for those deficient in these subjects on leaving school; and continued remedial classes at college for students who do not make sufficient progress before entry; at least a C average requirement to pass freshman English; and use of the best students to tutor those who are least well prepared.

## Concern over research cash

The Presidents of the American and Canadian Physiological Societies have sent a statement to President Carter and Prime Minister Trudeau expressing dismay at the dwindling federal support for fundamental biomedical research in the two countries.

They point out that in the past 50 years the main breakthroughs in therapeutics and preventive medicine have most often come from basic investigation of biological processes, and that many incurable diseases will not be treatable until scientists understand the functions of the body organs and systems involved.

WASHINGTON

Raising undergraduate standards in the black colleges will be particularly difficult because so many of their entrants are, in Mr Cook's words, "still suffering from the legacy of segregated slum and ghetto school systems".

Many American black colleges started life as high schools for freed slaves and their families after the Civil War, when academic standards had to take second place to helping young negroes make the best of their new freedom and opportunity.

Academic excellence is now assuming more and more importance for the black graduates who are trying to get into law, medical and other professional and graduate schools.

Most black colleges already run remedial courses for their weaker entrants, and some insist that their students continue to take them right through their four undergraduate years. The difficult question is whether or not to let those who fail to make up the lost ground remain at university.

## Ford award on human rights

The Ford Foundation has awarded Harvard University law school a \$25,000 grant to study human rights in east Asia. The three-year project will result in foreign policy recommendations to the United States government.

The researchers will concentrate on countries continental east Asia, including China, Vietnam and Korea, but Japan will be used as a comparative reference.

Professor Jerome Cohen, the project director, said that Japan shared the Confucian influence of her mainland neighbours, but had been able to preserve civil liberties and maintain political and artistic freedom since the Second World War.

## Fees crisis: tax credits and grants begin Congress battle

The two rival ways of helping middle income families in America meet rising college fees have started their race through Congress in spectacular fashion.

The Senate Finance Committee passed by 11 votes to one a combination of the leading "tuition tax credit" proposals, which will allow families to deduct up to \$500 from their income tax payments a student in elementary, secondary or higher education.

Then the Senate Human Resources Committee approved an amended version of the administration's student assistance package—the \$1.5 billion expansion of existing federal grants and loans announced by President Carter last month to head off the politically popular credits, which he strongly opposes.

The two proposals will have to wait for the Senate to finish debating the Panama Canal treaties before they reach the floor of the chamber. Meanwhile, the two equivalent committees of the House of Representatives (Ways and Means and Education and Labour) will have considered, and no doubt passed, tuition tax credits and direct student aid increases.

For Congressional committees take care to protect and, if possible, extend their boundaries. If the tax credit is eventually enacted, a slice of educational policy making will effectively have passed to the Senate Finance and House Ways and Means committees from the Senate Human Resources and House Education and Labour committees.

The tax credit measure approved by the Senate Finance Committee

was an amalgamation of the two leading tax credit bills—one restricted to higher education and the other including fee-paying schools.

It would give a two-stage tax break: for the next two academic years undergraduates and vocational school students will get a \$250 credit—from 1980/81 the benefit is raised to \$500 and extended to pupils in parochial (mainly Roman Catholic) and independent schools, and to postgraduate and part-time students. The cost to the Treasury in lost taxes is expected to reach \$4,500m a year if it becomes fully operational.

The administration has said the principle of tuition tax credits is inequitable—with much of the benefit going to the wealthy—and that the inclusion of parochial schools may be unconstitutional. The Finance Committee has invited an early court ruling on the constitutionality of the measure in terms of the First Amendment, which has been interpreted to stop the government from directing aid to church-related institutions.

The Human Rights Committee Bill is more generous than President Carter's original proposal to families in the \$15,000 to \$25,000 income bracket. They would have received a flat \$250 basic grant under the Carter plan. The Senate Bill would give grants on a scale sliding from \$1,020 at the \$15,000 income level to \$250 at the \$25,000 income cut-off.

The President has repeated his threat to veto one of the two rival measures if Congress passes both. "A choice must be made," he said. "We cannot afford—and I will not accept—both a tuition tax credit demonstration of spending skill, proposed, I strongly urge the Congress to act responsibly on the administration's proposals."

## Growing call for rethink on training

The President of Columbia University's much respected Teachers College has added his voice in those demanding a radical overhaul of the way teachers, in their various forms, are trained in the United States.

Professor Lawrence Cremin said those entering the "educating professions" should have a doctorate and should have achieved basic skills in at least one academic or scientific field. They should also have a thorough grounding in teaching and learning, theory and on internship in various educational settings.

America's educational system was undergoing a revolution, he said, that had extended those who could be classed as educators far beyond school and college teachers. They included: day-care workers; script-writers in children's television programmes; "learning consultants" in libraries and museums; training officers in business and industry; and gerontologists in old people's centres.

Every faculty of education should be associated with a network of institutions—schools, colleges, day-care centres, libraries, museums, work places and community agencies. And these would be the setting for the rotating internships, Professor Cremin told the American Association of Colleges for Teacher Education.

He recommended dropping the thesis as a doctoral requirement. "I would prefer to see one or two solid research papers, a terse scholarly evaluation of an educational undertaking, and a first class demonstration of teaching skill, rather than a long, if competent, thesis that will sit unread in the library for ever."

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## Holland 7pc growth in college numbers

from John Richardson

**ROTTERDAM**  
The number of full-time students in Dutch universities has reached 133,200 in the present academic year 1977-78. This is an increase of 8,600—some 7 per cent on 1976-77. The growth trend is reinforced by the fact that there are now 21,800 first-year students, an increase of 1,700—almost 9 per cent—on last year's figures.

Among the higher faculties the steepest rises, averaging 13 per cent, are to be found in the arts (languages, history, the history of art, archaeology, music and drama). However, with the first-year courses the largest increases of about 20 per cent are recorded for theology, law and social science.

Women took a greater share of places. The percentage of female students overall went up from 26.2 to 27.4 per cent and from 31.2 to 32.1 per cent for first years. Social sciences and the arts were the most popular subjects, and technological subjects the least favoured.

## Australia

# Double boost on student cash

from John Kirkaldy

**SYDNEY**

Support from slightly unexpected sources has boosted sagging hopes for the finances of student unions in Australia.

A court victory in New South Wales and strong backing from the Federation of Australian Staff Associations (FAUSA) has enabled student activists a little more optimistic in what has been seen by many as a "make or break" year.

The present plight of the Australian Union of Students (AUS) and two levels—legislative and judicial. The state government of Western Australia has passed a law outlawing compulsory membership of student unions, and a similar move is still possible in the Queensland.

Modernist student opinion, led by Democratic and Young Clubs, has challenged the right of student unions to compulsorily fund anything other than educational and social activities. Members of these groups allege that in the past money has been given to support radical causes, such as Third World free-

dom groups and bodies totally opposed to the present federal government of Mr Malcolm Fraser, the Prime Minister.

A case in the Victorian Supreme Court last November supported these groups by stating that a very narrow definition of student unions should be adopted. Eleven institutions have already received from AUS which raised the body at its recent council meeting in London. Its budget from AS\$14,000 to AS\$425,000 and can many full-time positions in the union.

Student difficulties were compounded with the voluntary liquidation of AUS Travel Trust August brought has been subsequently rejected by a consortium of international airlines (TTIES, February 10).

The new court ruling came in the NSW equity court on February 23 and was as a result of a case brought by a commerce student, Mr Mike Farrell, who was challenging the right of the students' union of the University of NSW, the country's largest university, to levy a compulsory fee levied by the union. Both the university and students' union were joint dependants in the case.

Mr Justice Rath ruled that both bodies were entitled to collect and receive such fees. The president of the NSW students' union, Ms Dixie Condon, claimed that the decision was a victory for students. But she said: "We still have to win the principle of maintaining the autonomy of students' unions, not just in this campus but throughout Australia."

Ms Condon claimed some of the fees were used for anti-social purposes, such as the purchase of motor cars, and for the purchase of alcohol. All are likely to be highly controversial.

Support for student unions also came from FAUSA at a council meeting in Melbourne last month. Mr Les Wallis, general secretary of FAUSA, which represents staff in Australian universities, said: "It is our belief that universities should clearly be empowered both to require payment of fees for student unions and to be legally entitled to collect them."

This support will constitute a strong pressure group on university vice-chancellors, as the FAUSA council agreed to advise student unions and universities throughout Australia.

## South Africa Black staff bridge gap in salaries

from Louis Hutz

**JOHANNESBURG**  
The traditional gap between the salaries paid to white and black staff in South Africa is closing. From April 1 black academics employed at their respective universities will be paid the same as their white colleagues doing similar work there, with the exception of some senior academic staff who will also apply to the same staff and to senior laboratory assistants.

The pay disparity has long been one of the main grievances against the Bantu Education system. Among other things, it is regarded as a barrier to the entry of African higher education.

Meanwhile, the University of Stellenbosch, the country's oldest Afrikaans-medium university, has opened its doors to undergraduates of all races.

The University of Stellenbosch, the country's oldest Afrikaans-medium university, has opened its doors to undergraduates of all races.

## Sunday

Finally aware, I was aware of a knot of anxiety somewhere below my diaphragm. In fact, several knots. Having read that the only cure is to face up to the rascal problems, I wrapped up and walked the long way down to the village for a newspaper through the freezing drizzle.

Problems. First and always there is living with our "university". Bills exceed salary. Result, according to Micaela's theorem, misery. Three exam papers to finish this week. Two conference papers to be in Rome by Wednesday. Four abstracts for the Geneva micro-computer conference by the end of the week. Jerry's fall yesterday.

I almost forgot the highest knot of all. I live in a sea of paper. Not by choice, but through sheer incapacity to cope with the inflow. Despite the university's provision of 0.05 of a secretary, I have nightmares about paper, and last week one came true—I lost a manuscript of an invited review paper which had taken 18 months to write. Then there is the half-finished paper for the Dal which is two months late.

I called in on Jerry. He is a one-man company, and is making part of the equipment for a British Rail contract, purely as a favour. He cannot get four cantilevers made. Without the cantilevers we miss the Friday deadline, then I get no money to pay my research fellow. Without one the research group might as well pack up and go home. I must get them made.

Apart from juggling bills, I spent most of the rest of the day in a rather unsuccessful writing session. Remembered at the last minute, I promised to do Don's diary. Only journalists have ever called me a diarist. The word conjures up a picture of an old boy shuffling round Oxford in carpet slippers and complaining in an angry letter to *The Times* whenever he gets a pay rise.

I wonder what they expect of an engineer. Do they ever let them think of a space or a few infinitives and humdrum words to lend authenticity?

**Monday**

Points failure in Hackney Downs—two goals. City News on sale today. In my opinion one of the best things to happen recently in a British university—a professional newspaper produced with disinterested disregard for the insolence of office and the proud man's constituency. As a result there are one or two old hands waiting to slip the editor a quick quiver.

A degrading main headline "VC testing to chair UGC". Dr Parker had quietly set about transforming the rigid ex-polytechnic, devoted to teaching and administration into a truly liberal institution dedicated to learning, scholarship and research. Unfortunately his method (stealth) takes time, and now he is to depart before his influence has penetrated the outer reaches of the university.

Down in the workshop I persuaded Fred (one of our courtes of excellence) to make the cantilevers. I planned the library to see if they could find out what was written Don's Diary in the last year.

**Tuesday**

On the train, which this morning was on time, I prepared my 100-year lecture on reliability. On arrival tidied up my notes, then having 20 minutes to spare made for the post common room. I make a point of sitting with members of other departments, since one of our less fortunate and rigid departmentalists.

Conversation today stemmed from City News. The story seemed to sort out the sheep from the goats. The good guys (in my book) were pretty good. Another story was the inflation of democracy. The thing of the "invisible" VC. I have never been all that sold on the old

financial control from the centre. Moreover, student numbers are still growing, though more slowly than last year. Last December there were 837,775 students enrolled in the university sector—2 per cent up on last year.

Particularly interesting is the fact that the numbers of students in humanities curriculum seem to be tapering off. Between the academic year 1976-77 and 1977-78, numbers in this field grew by 1.5 per cent from 274,447 to 277,677. Law, well known as a safe option in French universities, shared the same fate.

comprehensive teachers have created a voluntary overtime ban but it has not had a great effect on boarding jobs.

The AC has directed more at stimulating rising unemployment to higher education rather than trying to create more jobs. Even so, the outlook will continue to be rising unemployment for Federation members in the 1980s.

The latest figures show that 3,400 AC members are out of work, plus an estimated 1,200 "unemployed" of the organization's 20 member unions.

The humanities and social science graduates' union is the worst hit, with almost 800 unemployed. Lawyers, scientists and architects follow, around the 500 mark. Denmark's total population is five million, and average unemployment for AC members is 13 per cent, but in some specialties, like philosophy and dentistry, the rate is 32 per cent and above.

The prime target of the agreement will be teaching posts and the university has intended to produce more permanent jobs for existing part-time staff.

The award is to enable universities, in times of tight budgets, to employ some of the most promising researchers.

With intense competition expected, universities may present only up to 10 candidates in order of priority. Two selection committees have been appointed, one for the humanities and social sciences and the other for the natural sciences and technology. They are expected to judge the candidates by international standards.

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# Black Rhodesian academics map out Africanisation

The University of Rhodesia has 372 academic, administrative and library staff positions of which 31 are currently allocated to blacks. Twenty-six of these black staff members have just drawn up their views on the Africanisation of the university in Salisbury in a constitutional settlement is reached.

The document, prepared in response to a paper entitled "The University and Constitutional Change" by Professor Robert Craig, the principal, is the first to be publicly circulated by the university's black staff. It is published in full for the first time by THE TIMES.

The African university must be part of the African society. The university in Africa cannot be discussed outside the framework of the political, socio-economic and cultural development of the state and the society in which it is located. In colonial times universities reflected the then existing political, socio-economic and cultural set-up. The personnel, both administrative and academic, were white. The curriculum also reflected the metropolitan power's cultural and economic interests. Thus, universities in Africa were patterned on identical lines to universities in Western Europe and North America.

In post-independent Africa, the role of the university is connected with the consolidation of hard-won political independence and the wide variety of expectations of the African masses with the socio-economic and political benefits of independence.

While accepting the delays due to history, we can affirm that Africanisation of universities in Africa is essentially imperative, not as an end in itself, but as a means to attain universal truth. Africanisation actually means the conditions actually prevailing in each country. The basic principle behind the concept of Africanisation cannot be summed up in the words of "The African will educate an African". For this, the African teacher will have to satisfy the same standards as other teachers elsewhere. These standards will not be identical but equivalent. It is the African teacher who will teach his African pupil the principles and means of development peculiar to Africa.

Africanisation should be tackled on three main fronts:—  
(1) Africanizing the curricula;  
(2) Africanizing the Administrative staff; and  
(3) Africanizing the academic staff.

The principle behind Africanisation is that the future of an African country like the future of Zimbabwe can be carried out satisfactorily only by Africans. It is in the primary schools, secondary schools, teachers' training colleges, technical colleges and universities that Africa will carry out its true economic, social and cultural revolution. Only the African will be able to teach the African pupil and student how and why we must carry out the revolutionary task.

The so-called exact or natural sciences will not change, only the manner in which they are taught. But philosophy and the humanistic transformation in order that the new social and political order might adequately be interpreted from an African perspective. The Africanisation of an African university cannot be considered a sign of nationalism or any kind of loss of an African European culture. It is a recognition of the fact that universities are set up to serve the academic and intellectual interests of Africa and the Africans.

It is also an open admission that universities in Africa are essentially African universities which must reflect the hopes, fears and aspira-

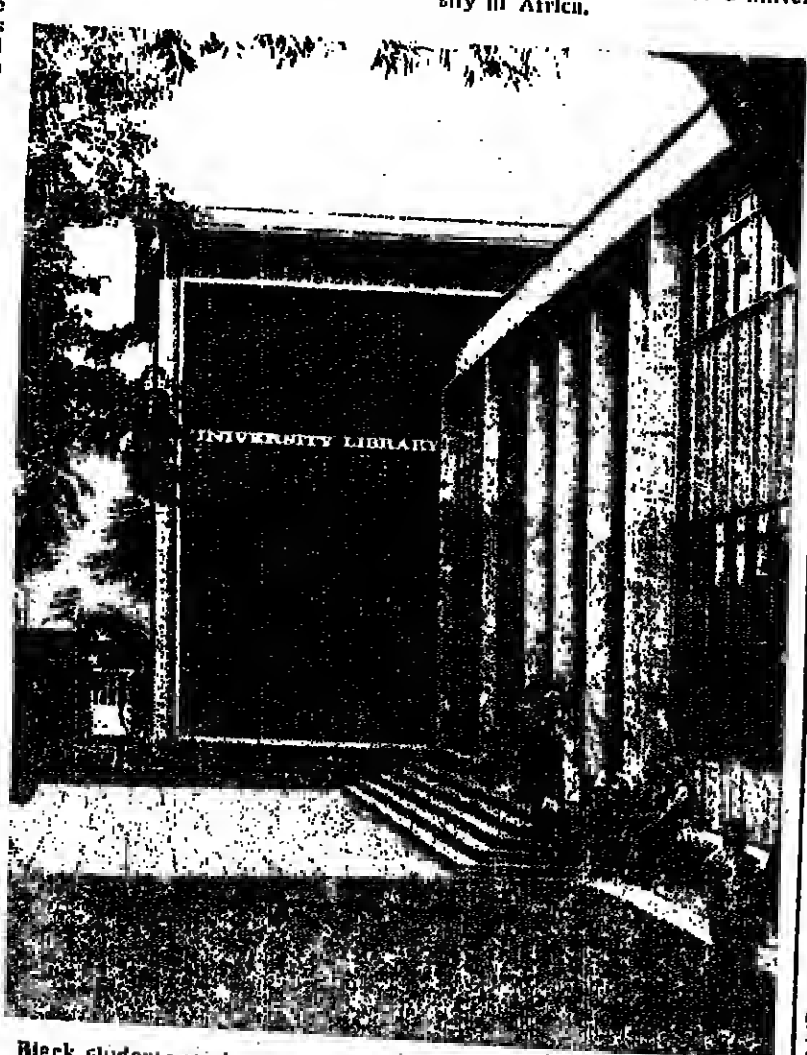
tions of the African people. In no case can Africanisation be considered as a desire on the part of Africans to cut themselves off from the rest of the world. The goal of Africanisation in our view is to make the African universities more useful and more efficient so that they will be able to respond to the immediate needs of Africa. If we insist on the necessity and urgency of Africanisation, it is simply because we want to see our universities play their true role and serve the African people in their task of economic reconstruction and human development.

Some persons of ill will, will accuse us of "racism" because for them Africanisation means the expulsion of all non-African teachers and their replacement by Africans whether competent or not. We have never entered our minds as Africans in pursuit of less qualified personnel the job of educating our young people.

While Africanisation is a policy we strongly advocate, there are people of non-African or non-black origin who have identified themselves with the African cause. Such Africans came under our definition of Africanisation. They are committed to the new Zimbabwe nation. On the other hand, there are men and women at this university who have made it their duty over the years to obstruct Africanisation in the appointment and promotion of staff. Such people will have to go. Racial discrimination has been largely responsible for the low number of African staff in the established posts.

It must be stressed that even if Africanisation comes about immediately, that will not mean that Zimbabwe was closing isolation. Interdependence and the experience of others, especially of non-Western nations, will counterbalance the flood of Western ideas and culture which have shaped our political, cultural and economic institutions.

Already we have too much Western influence in the form of teachers and administrators. And research fellowships are unwittingly carried by Western values and influences among our own people. If a future free and non-aligned, Western Africa is to be built, we must not remain uncritical. Our universities must not remain instruments to perpetuate African culture passively, but rather the centre where the cultural heritage of our national past is preserved.



Black students at the library of the University of Rhodesia.

Guy Neave on the increasing debate over France's leading institutes

## Grandes ecoles may face reform in election year

Since the start of the university year, the ferment in France's grandes ecoles has been well-known. Strikes, agitation and, in cap it all, the proposal by students of the Ecole Nationale d'Administration (ENEA) that it be abolished and merged with the university system. The future of this prestigious body of institutes is also the subject of increasing debate, particularly on the left. In this article, we will look at some of the suggestions put forward to reform the grandes ecoles.

In France, the best known of the grandes ecoles are the Ecole Polytechnique and the Ecole Nationale d'Administration. The former, founded in 1794, trains high-level engineer administrators for the state technical corps, for the armed services and for high-level civil service jobs. The latter, founded in 1945, grants the less mathematically minded for administrative appointments in fields such as the tax inspectorate, the civil service, the state comptroller's office (commissaire des comptes) and the diplomatic service. The two are deadly rivals. According to scandal-mongers enragés (the deniers of ENA) speak rarely to polytechniciens and polytechniciens speak rarely to ENA. To the president when advising him.

The grandes ecoles may, broadly speaking, be compared to a cross between the civil service college and a graduate engineering faculty or, in a certain number of cases, a graduate business school. Curiously, for a system so enamoured of legal definitions, there is none to describe a grande ecole.

As a rule of thumb, it may be said that post-graduate level and are neither a university nor a university institute of technology, still less a higher technical school. Now, is it a "super sixth form" (school preparation). On this definition, the ENA is a "super sixth form" establishment can claim grande ecole status.

Of these 160 specialists in engineering education of various sorts, a further 10 teach business administration and management studies, the Ecole Nationale Supérieure being the most outstanding—and three are official cadet schools for the armed services. Most of them require two to three years intensive study in a super sixth form merely to be able to sit the entry examination which is astonishingly competitive. It is for instance, completely reckoned that students completing three years in a super sixth form are no less than the equivalent to university graduates in their attainment and knowledge.

They are also extremely difficult to get into. Take the case of ENSA. Last academic year, 4,007 candidates clamoured for admission. Only 214 were accepted. Take ENSA. Simply to be eligible for admission requires a minimum of two to three years in the super sixth form. This alone is difficult enough for those are only 182 super sixth forms throughout France and not all of them provide this special curriculum. Of the 1,917 candidates last year, 300 were accepted.

If the interest of political parties in these top establishments is growing, this reflects in turn, growing student activism in the grandes ecoles. Such militancy, to say the least, unusual. Even at the height of 1968, the grandes ecoles remained aloof, serene and untroubled by the uproar on the streets and in the universities, a demerit which more than recouped the products of these inviolable men. The position is changing, however. Student unionism has arrived in the shadow of the Union des Grandes Ecoles closely aligned with the left wing Union Nationale des Etudiants de France.

Membership of this union is now total 270 institutes—a viable force. Although the bulk of the criticism

directed against the grandes ecoles comes from the left of centre, the "left wing parties" are the "Fédération Nationale de la Jeunesse" (FNJ) and the "Confédération Nationale des Professeurs" (CNP) has added more names to the list. To the radical socialist party of the major barriers to opening the top administrative posts to state and in private sector employment, to new talent is the degree of selectivity. The degree of new scientific courses and the rigidity of the curriculum. In this they have the support of the employers' federations. The employers' federations feel the Polytechnique, in the first place, is too narrow in its syllabus. In addition, less stress should be laid on fundamental theory, more on the application of the theory to the courses. Finally, the employers' federations are in favour of easing entry into the grandes ecoles by the abolition of the competitive entry examination, to be replaced by selection on the basis of school records or on the basis of school results "as in the case in all advanced countries".

Employers do not share this view, however. They propose the merger between university and grandes ecoles, at present very rare, should be made more easy, both the students and the employers. If the social segregation of the grandes ecoles is to be broken down, the Polytechnique must be reformed.

Francis Mitterand, Socialist Party, somewhat more daring, looks forward to the integration of the grandes ecoles and the universities. From this, the Polytechnique would emerge, but it would retain the multi-disciplinary approach, which is its strength. The Polytechnique would be a vocational training school, which would be in industry or in administration, the socialists feel.

However, administrative changes are needed, says the Socialist Party. First, all grandes ecoles should come under a single ministry. Second, the syllabus taught in the super sixth form should gradually be brought into line with the first two years of university, thus broadening the range of subjects which students are drawn to in the future.

Not dissimilar to the proposal put forward by the Communist Party. Certainly, the CP backs the idea of bringing the grandes ecoles closer to the universities. The danger, however, is to be guaranteed autonomy in both finance and teaching. Basically, the Communist Party argues, the grandes ecoles are engaged in the same undertaking. This is to provide the country with high-level, technologically trained manpower. If it is so, then the grandes ecoles should be under the same legal and administrative regime as the universities and this means bringing them under the umbrella of the Ministry of Higher Education.

At present, they remain outside. Whatever one's feelings about the grandes ecoles—whether they are merely institutes for the training of the qualifications of traditional elites and political dynasties or whether they stand as the vanguard of a new elite of high-level manpower training in administration, economics and engineering—the debate on their future is now joined. Whether it will go any further depends on the outcome of the General Election, which will be settled in the second round of voting on Sunday.

Guy Neave

The author is maître de recherche at the Institute of Education of the European Cultural Foundation, Paris IX, Dauphine.

## Polytechnic Profile 29 Middlesex

Think of a typical polytechnic problem and you will find it in the unglorified format of a building. Scattered over a jumble of sites, created from an unpredictable sequence of improbable mergers, and some 2,000 students short of its full capacity, it is the problem of polytechnic par excellence. When it was formed in 1973 its director, Dr Raymond Rickett, was warned that he had accepted one of the most difficult jobs in the binary system.

Five years later, the institution is on the brink of its third bout of mergers. In 1973 the original trio of colleges were Hendon and Enfield Colleges of Technology and the Hornsey College of Art. A year later Trent Park College of Education and New College of Speech and Drama were brought in. Now the polytechnic is in the throes of merging with another educational college—All Saints.

The result is an octopus of a polytechnic sprawling in 13 sites over some 100 densely populated square miles. More than 5,000 students work in an array of prefabricated huts, purpose-built colleges, former primary schools and spacious mansion houses. Fine art students paint in ramshackle studios inside Alexandra Palace; interior designers and engineering students work in the lofts of a converted industrial warehouse in Bounds Green.

The mixture of neoclassical styles is even more bizarre. Enfield College—former shopping ground of literary gurus like Eric Robinson and George Bernard Shaw—is huddled in the centre of an ugly industrial estate. Highly political, social and sciences and social union studies, it has little in common with the glossy, arty and politically insular traditions of post-occupational Hornsey.

Hendon, too, had a distinctive tradition of its own, and the teacher training colleges, led by and serving institutions, looked upon their marriage with a sceptical and somewhat wary polytechnic with outright alarm.

That the polytechnic has nevertheless been able to develop a precarious sense of unity owes much to a decision immediately after designation to bring in a unique form of organisation designed to bind the colleges together and destroy in one stroke their old affiliations and departmental structures.

Described as "the Middlesex matrix", and irreverently dubbed the "polytechnic starship" by a graphic designer commissioned to draw a diagram of it, the new management system has dominated academic development and discussion at the polytechnic for five years. Unhatched of Dr Rickett, its purpose is to break down subject departments and thereby liberate polytechnic students from the tyranny of the discipline which channels them much of higher education.

Under the matrix there are no traditional departments. Academic staff are aligned to one of six resource centres, and course leaders are able in theory to shop around the resource centres for whatever staff expertise they need for their courses. In the long run, the theory goes, the matrix will erode the last vestige of the traditional disciplinary courses which are an important part of the polytechnic idea.

A good example of the matrix in practice is the polytechnic's giant humanities degree—500 students strong and the first of its type to gain approval from the Council for National Academic Awards. Students joining the degree are able to construct an individual programme by choosing 10 out of an astonishing 180 course modules, ranging across philosophy, law, languages, geography, drama, history of art, psychology and American studies.

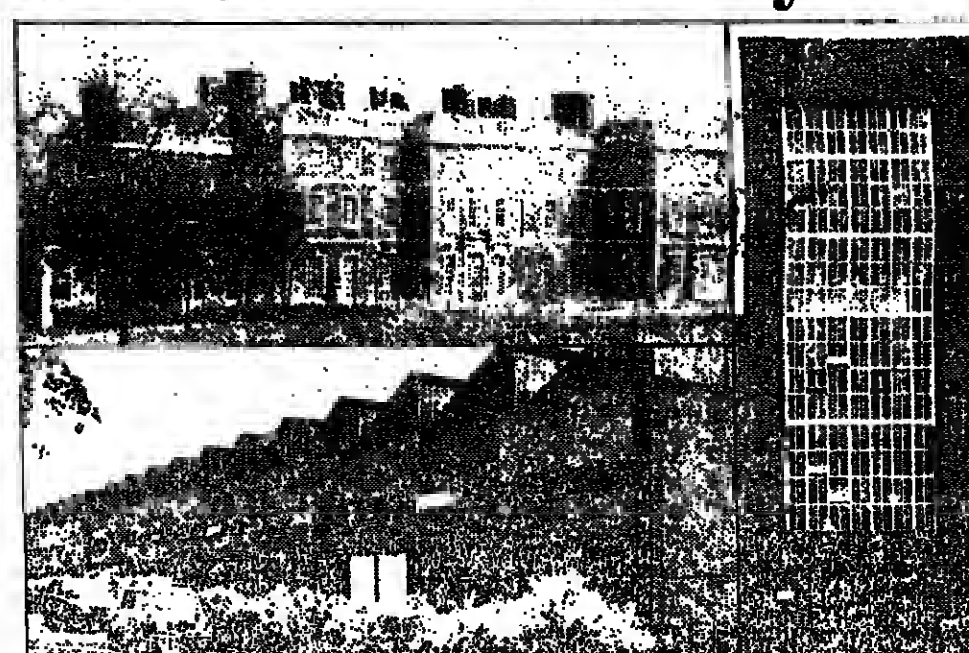
Only the enormous staff base of the polytechnic makes the range of choice possible. Roger Waterhouse, the course leader, estimates that 106 academics helped to prepare the original submission for the CNA. And yet hardly anyone teaches full-time on the course. Staff are summoned up via the matrix from all the former colleges: at historians from Hornsey, linguists, philosophers, psychologists, dramatists and historians from Trent Park, Hendon, Enfield and New College.

But the humanities degree shows up the weaknesses as well as the strengths of the Middlesex matrix. One basic difficulty arises from offering the degree on two sites—Enfield and Hendon—13 miles apart. Students do not have to travel from one to the other unless they opt for special combinations of subjects. But many teachers make the expensive and time-consuming journey around the North Circular, and library facilities have to be duplicated.

Some subject-groups in the polytechnic are alarmed by the modular approach of the humanities degree and the tendency of the matrix to break down traditional disciplines. They argue that the humanities degree is an imperialist monster gobbling up single-subject degrees and regurgitating an unpalatable and confusing mess of modules. One group of staff fought for months to keep their degree—a BA in modern English studies—out of the Humanities manolith.

The humanities programme, therefore, encapsulates two of the main flaws of the matrix. One is the direct it poses to subjects—concern. The other is that the matrix, invented in the polytechnic's salad days when a move to a single site was confidently expected, may prove an inappropriate command

## Unique mix of academic and architectural style



Three faces of the Middlesex octopus: top left, Trent Park, above left, the Cat Hill, Cockfosters, site and, right, the Enfield building.

structure for what seems likely to remain a multi-site polytechnic.

According to David Lovatt, head of the polytechnic's internal think-tank, the educational development group, its matrix was designed for a single-site institution in an era of expansion. Now that hopes of a single site, or even a large central site, have collapsed, he advocates a more devalued system. This could mean—although the proposal has not yet been put in so many words—merging the polytechnic with other sites, or even a merger with a polytechnic, but it has probably been affected least.

One reason, according to John Reid, the dean, is that art and design students are wedded to their specialist equipment and cannot be transferred whimsically from place to place. A major art and design site at Cat Hill has been under development for years and will eventually house most of Hornsey's courses.

But another reason is that the polytechnic has little to offer art and design education. Cooperation between design education and industry has a tradition going back 200 years. John Reid points out: "It was not invented yesterday by Middlesex Polytechnic."

The task facing Alison Grady, dean of education and performing arts, is, however, much more difficult. In 1974 the polytechnic had about 1,500 education students, with another 600 at All Saints. By 1980 the total has to be cut to 750. Staff diversification, however, is made more difficult because the polytechnic is already a mature institution with major degree programmes under way in all areas. Trent Park staff were in no position to set up their own humanities degrees, and some staff dedicated to research training have had difficulty contributing to the polytechnic's academic programme.

Nevertheless, staff from the resource centres have contributed substantially to humanities and art and design, and after phasing out his old degrees and degrees, the faculty has developed new degrees in the performing arts and a special BEd programme for serving teachers.

Besides its concrete academic contribution, staff at Trent Park believe that the college has had a civilizing effect on the polytechnic. "You may laugh at the old college of education genteel tradition of tea in china cups," says David Lovatt, "but there was something valuable in that which rubs off on the students." He disapproves strongly of the Enfield site. "It is an inhumane environment, an ugly site where even the new buildings they put up are ugly, and couldn't be, and the inside is scruffy."

As a whole, the polytechnic is seriously overstuffed. It has the lowest staff-student ratio of all 30 polytechnics, and by pooling committee standards is either short of 2,000 students or overstaffed by 200 students. The staff squeeze that has resulted has hit almost every course, but one of the most publicized disputes has been the reduction of teachers on the three social work courses—a move which brought intervention from the Central Council for Education and Training in Social Work.

Alf Holt, dean of social science, hopes that the academic community will eventually commit itself to safeguarding the social work courses, but he entertains no illusions about the polytechnic's dire staffing predicament. It is made worse, he says, by difficulties in maintaining Middlesex's share of the student market.

Some of the courses faring recruiting difficulties are doing so in spite of potentially high student demand. Enfield's diploma in industrial relations and trade union studies—a pioneering course aimed specifically at people actively working in trade unions—has fallen from more than 90 students two years ago to fewer than 60 now.

But the main reason, according to the course leader, Alan Richardson, is that the Training Services Agency has withdrawn its TOPS awards, and students have to rely on increasingly scarce local authority discretionary awards.

The trade union courses have also suffered from staff cuts, and now they face a new threat—academic drift. Alan Richardson says that the course, which is fairly partisan in its commitment to trade unionism, has always been under pressure to transform itself into a conventional management-oriented industrial relations programme. Now, with a new one-year diploma going "creakily" forward for CNA validation, there are growing pressures in favour of more neutrality and objectivity.

The clampdown on staff has not, however, prevented the creation of new courses. Middlesex is particularly enthusiastic about its "two year diploma going 'creakily' forward"—the diploma in higher education. Joel Gladstone, the leader of the course, believes that the DipeHE can help break down Britain's specialist and elitist higher education system and offer wide opportunities in students who would not have gained entry in the normal way.

Determined to break down the two-level stratification, the course designers have made generous use of permission to recruit unqualified mature students—over half the DipeHE intake has been accepted in this way after careful vetting. The success of the diploma will be the ability of its students to transfer to degree programmes without loss of time.

Another innovation is the degree in European business administration, which expects its first graduates this year. Run in partnership with the Ecole Supérieure de Commerce et d'Administration des Entreprises at Rheims, the course has a mixed intake of English and French students, who spend two years at each institution. Geary Earls, the course leader, claims that the only difficulty now facing the course is that it is in danger of expanding too fast and thereby undermining its high academic standards.

But while the polytechnic is rightly proud of its many new courses, the welter of course development that has dominated its life over the past decade has contributed to a serious loss of research within the institution. Dr Michael Edwards, its deputy director, concedes that for a polytechnic running more than 40 CNA degrees, the research base is minimal. Apart from some impressive work in planning and geography, and in inter-disciplinary research, most subject areas have failed to develop their research potential.

Alf Holt, dean of social science, is particularly disappointed with the performance of his sociology group. With over 40 members it is one of the largest in the country and runs the polytechnic's first masters programme—in deviance and social policy. "At the moment, the group has not achieved anything like its potential in research, publication and higher degrees. The reason was the early importance we placed on course development. We need a new emphasis on research which was absent in the middle and late sixties."

The polytechnic's directorate is also keen to make research a major promotion criteria, but many members of the polytechnic believe that the real cause of the academic malaise is inherent in the matrix system. They point to the grant status of the subject groups, who have no formal role in the structure and to the lack of course loyalty induced by a system which requires lecturers to work for a number of different course leaders. More basically, the matrix is designed specifically to make the course into a focus of attention, while the discipline tends to be peripheral.

Dr Rickett concedes that there may be a grain of truth in this argument: "We have avoided the tyranny of the subject, and some people might argue that the prize has been too high." But he believes that whatever the defects of the matrix, it has helped, along with the production of a professional weekly newspaper for the polytechnic, to weld the constituent colleges into one.

He is also optimistic about the future, despite the polytechnic's chronic overstuffed and accommodation problems. He points out that in 1973 the colleges had an overall student-staff ratio of 9.7, but that it has already been raised to about 7. For the future, he rules out massive redundancies, but wants the polytechnic to have carefully to review and redesign many of its degrees and teaching methods if it is to move to an acceptable staffing ratio.

Dr Rickett admits to being as irrepressible optimist, and keeps a model of the Good Soldier Schweik in his office to drive the point home. But many of his colleagues are more gloomy. Alf Holt says: "The tragedy of Middlesex Polytechnic is that it was set up too late. It is only now that we are beginning to see a more coherent disposition of sites. If we had been earlier, we might have got a central site, but soon after designation we were hit by the first bout of cuts. Since then we have known nothing but the fiercest scrutiny of our budgets. My interim verdict on Middlesex Polytechnic? Not proven."

Peter David







## LETTERS TO THE EDITOR

### Academics in Ulster

### The conference

### This year, next year?

Almost six months have passed since the date on which university teachers should have received their annual salary increases but there is still apparently little prospect of an early settlement between the Association of University Teachers and the Government. The AUT may have accepted that the annual increase to be paid from last October must be within the Government's 10 per cent guidelines. But the association remains determined to extract from the Government's offer a "copper-bottomed" is still the favourite adjective—promises about the phasing of the revaluation of their anomaly. Over recent weeks the AUT negotiators have become more and more frustrated by what they regard as the Government's equivocalness on this second point. This growing frustration was the main motive behind the executive's decision to convene the emergency council meeting in London tomorrow.

This council faces a clear choice. Either the delegates can attempt to put some teeth into the programme of actions agreed at the Heriot-Watt conference just before Christmas (most prominent among them was the threat to refuse to mark examinations); or they can call it a day by accepting the 9.8 per cent increases now being offered and trusting that Mrs Williams—or her successor in the Department of Education and Science—will keep her promise to rectify their salary anomaly as soon as possible.

Their hearts may incline them to choose the first course but their heads should dictate that they choose the second. No doubt hard things will be said about the Government's parsimonious intransigence tomorrow. Time has done nothing to assuage the bitter sense of grievance felt by the overwhelming majority of university teachers about the way in which they were cheated, not more but twice, of legitimate increases in 1975 and 1976.

In fact university teachers have little to gain and a great deal to lose by participating in this late stage on a hastily prepared campaign of militant action. The list of pros is short and its content uncertain. It is true that the AUT's campaign has succeeded in persuading both politicians and the public that university teachers suffered disparage-

ment when the present incomes policy was first introduced. But this initial sympathy is certainly overruled by their brutal support for the Government's policy in wages which was demonstrated most effectively at the time of the teachers' strike.

Nor can university teachers make up for this lack of vigorous public support with industrial muscle. Some delegates impudently argue that the concerted hostility of university teachers could pose an electoral threat to the Labour Party in marginal university seats. But this exaggerates the trade union solidarity of university teachers and ignores to them a petty-mindedness that few of them possess.

On the other side the drawbacks of militant action are many and formidable. First, university teachers have had to wait for the end of October. So its value has been eroded by the inflation of half a year. Secondly, disruption in universities, whatever the justice of its cause, might undermine their public reputation which is probably higher than at any time since the mid-1960s. If this happened, the long-term impact on university teachers' salaries would be destroyed. Thirdly, the AUT should remember 1975. Although the decision to go in arbitration then was probably wise, it was one of the factors that contributed to the creation of the anomaly in the first place. With Mr Healey and Prime Minister already talking about phasing future increases, the prospect of a General Election looming with its paralyzing effect on Government, the AUT should be careful not to get caught out again.

In any case what are still at issue are scanty shavings. Mrs Williams has already given as firm a promise as any politician can that the anomaly will be rectified. No doubt a clear statement will also be made when the university grant up to 1981 is announced. In any event, this is not a matter that should be left to the discretion of the Government. It is already a matter of public record that the anomaly will be rectified. No doubt a clear statement will also be made when the university grant up to 1981 is announced. In any event, this is not a matter that should be left to the discretion of the Government.

Sir, As another Englishman, also a Roman Catholic, who joined the staff of The Queen's University of Belfast a few weeks before Bruce Cooper went to the Ulster College, I was interested in his reflections. *THE TIMES* January 20th May 1976 in an obituary of his article.

"The academics have still to experience their finest hour. One might reasonably expect the institutions of higher education to make some sort of positive contribution to some of the problems that rack the province, but, the politicians included, by and large, they have studiously shied away from any qualified engagement and linguistic arguments. You look to find for research topics such as 'The Bullying of the Poor' or 'The Life Cycle of Duckweed' or 'Kitchen accounts in medieval universities'."

This example is unfortunate. I was personally responsible for two surveys of unemployment in Belfast, in 1971 and 1972. Dr F. Cooper's article, published in the *Irish Times*, was a masterpiece of analysis and criticism of society and its ills. The survey of unemployment in Belfast, in 1971 and 1972, was a masterpiece of analysis and criticism of society and its ills. The survey of unemployment in Belfast, in 1971 and 1972, was a masterpiece of analysis and criticism of society and its ills.

### Grants for drama

Sir, In protesting against the GLC Arts Committee's decision to cut off support grants from the Royal Court and Open Space Theatres, I am sure that the Open Space Theatre, in particular, will be a victim of the cut. The Open Space Theatre, in particular, will be a victim of the cut. The Open Space Theatre, in particular, will be a victim of the cut.

In the teaching material of A302 we of several points mention the subsidized theatres, the work they do and their dependence on subsidies. In the very last section of the course "An interim Perspective," we specifically mention the Royal Court and the Open Space, among others, as theatres whose work is of special value to students of drama. It may not be widely known that the Open Space has helped us with our summer school programmes for six years—for five

### Strife over salaries

Sir,—It is depressing to see the inter-college strife over salaries continuing between university and polytechnic staff. I have for long thought that the two sides should combine in negotiating a productivity deal with the employers. Unlike some of the recent dubious productivity agreements, productivity has already risen in many educational institutions.

The student/staff ratio for my department has over the last two years risen from about 5.5:1 to 12:1. During the same period, my disposable income has fallen by about 20 per cent. What other group of workers would tolerate a situation of rising productivity and falling income?

Productivity as a criterion for salary increases has, in my opinion, assumed greater significance since the publication of the DES document—*Higher Education in the 1990s*. One of the options suggested for coping with the "hump" is to pack more students in without increasing staffing levels,

lent in the Irish Republic, has to be seen as *troubling the clock*. Two reasons are advanced for the importance of the academics in Northern Ireland. At the individual level it is said that most academics born and reared in Northern Ireland are as much prisoners of their culture and society as any other Ulstermen, and that it is unreasonable to expect them to be other than uniform in the expectations of their fellow Ulstermen. Yet it has to be said that a few of them do have the vision and the courage to defy social pressures and act as catalysts and critics of disintegration.

At the institutional level there is a general acceptance of irrelevance because it is politically safe. There are frequent references to the dreadful things that happen to universities that allow themselves to become "involved in politics," coupled with reminders that individual academics are always free to apply for research grants, and to focus their research, research and writing in whatever direction they think fit.

In a situation where very few academics are either sufficiently independent, or feel free and secure enough, to perform the duty of analysis and criticism of society and its ills, the strain on those few is tremendous.

The current financial crisis in the universities has added to the strain on all academics. But the Whitehall-inspired discrimination against the social sciences (the factor of applied national and international research is seen as another major factor).

The point is that research into the life cycle of duckweed is applied national science, and therefore a good thing, while research into the kitchen accounts in medieval universities requires no money, no skill, time, patience, and a seat in the Public Record Office.

Yours faithfully,  
A. E. C. W. SPENCER,  
Senior lecturer in social studies,  
The Queen's University of Belfast.

with Shakespeare studies, and last year with a performance of a contemporary play (E. A. Whitehead), Alford.

Naturally I regard with personal horror and do not academic disapproval any development, and in the present case, which threatens to reduce the work and study of drama in a largely philistine manner, artistic principles are flouted, and the best work in many fields is only possible if responsibility and indifference support bodies such as the Arts Council, and those local authorities which are prepared, without strings, to operate regularly and fairly.

The manner and timing of the GLC Arts Committee's action in this case are deplorable; since under-privileged, artistic enterprises are in receipt of increased grants, I work is of special value to students of drama. It may not be widely known that the Open Space has helped us with our summer school programmes for six years—for five

This will surely be an irresistible temptation for any government; hence, the AUT and NATFHE ought to get the criterion of productivity established before the flood tide comes in.

Yours faithfully,  
D. M. REED,  
Head of school of sociology,  
Kingston Polytechnic.

### Preacher astonished

Sir,—I have just read, to my great astonishment, in *Daily Mirror*, March 10th by Professor Ian Davies the entry for "Sunday" in which he states that he had listened to me in Westminster Chapel.

As I have not preached on a Sunday in Westminster Chapel for just over 10 years my doubts concerning the "scientific" nature of sociology are greatly increased.

Yours faithfully,  
D. M. LLOYD-JONES (Rev Dr),  
49 Croftfield Road,  
Bellingham,  
London.

Sir,—I was disappointed to find that your report (*THE TIMES*, March 2nd) of the THES/AUT conference at the Universities and British Council of the Dundee branch of the AUT made no reference to a speech by Mr R. A. Jackson, the THES education officer.

Cardon (Lakes), introducing the DES projections for student numbers in higher education, emphasized the need to "broaden the social spectrum" of the student intake, and particularly to provide opportunities for mature students—including students who do not have qualifications which satisfy universities' normal entrance criteria.

He made no mention of the special problems this new kind of intake would raise for us; and more to the point, apart from the claim to the "fourth shore" of the benefits of North Sea oil, said nothing about how the new intake should and could be financed.

Mr Jackson on the other hand gave a very fair review of the problems we would have to confront together with an impressive list of reasons why we should make the effort to confront them, and he listed for us the kind of thing that a Government that claimed to want such a widening of opportunities would have to spend its money on.

Briefly: we would need a massive improvement in secondary education, an extension in the number and kind of courses available to the 16-18 age group, and far more secondary schools, especially for part-time students. I would myself add to his list the fact that universities would also need more funds to set up and develop the new kinds of courses alongside the old—this is a new intake would involve a very much more than Mr Jackson had to say will receive much wider publicity both in the universities and among the public as a whole.

Mr Jackson's speech left me with a strong conviction that the Government of which he is part is at the moment merely playing with the notion of education ("broadening" it) and is not seriously considering what much wider publicity both in the universities and among the public as a whole.

I gave no indication that the daunting task in all educational spheres was to be reversed. It spoke with unbelievable complacency of the problems in primary and secondary schools, being already "sorted out." He held up to us for emulation the response of the teacher training colleges to the Government's call to "take in" (unhappy irony) more mature students—apparently unaware that as a result of Government cutbacks most of these students will now be unemployed teachers, and that he told us what we had to train our own new intake for.

When it was pointed out to him that his own speech claimed that Britain was undergoing a necessary transition to a "minimal labour economy" and that this seemed to imply no jobs for our students, he declared that he was speaking in a context of training people to deal with the "problem of leisure," "work ethic," the unemployed will be glad to hear, is a thing of the past and no longer to be fostered.

The relationship between the universities and Britain's future is "something that the present Government has not yet got to grips with." The theme of February's conference was that it brought into the open how many misunderstandings and conflicting interests exist in the minds of all parties to the debate. It is to be hoped that the matter will not be allowed to rest long in the present confusion, and that February's speeches will be turned into some practical and properly financed form of action.

Yours faithfully,  
JENNIFER BIRKETT,  
Secretary, Dundee Association of University Teachers.

Letters for publication should arrive by Tuesday morning at the latest. They should be as short as possible, and the editor reserves the right to cut or amend them if necessary.

# Higher Education in America

A TIMES HIGHER EDUCATION SUPPLEMENT SPECIAL SURVEY

The structural and financial changes initiated or accelerated after 1968 are likely to persist and become part of the higher educational tradition. At the same time, the radical curricular and instructional changes suggested by the non-traditional movement, the rationale of some new institutions, and the egalitarian reformers are not likely to become deeply imbedded or particularly influential. If this is so, it then becomes necessary to determine why.

A major reason for questioning the long-term significance of the non-traditional movement is that it seems to rest on an conception of higher education as an agent for reforming society. Providing new services for many different groups of people seems to assume a breakdown in other social institutions that have previously been expected to provide service. Thus, higher education is seen as a surrogate for the family, by providing day-care centres; a surrogate for elementary and secondary education, by providing basic education; a surrogate for industry and unions, by providing leisure-time activities and a surrogate for the entire knowledge industry, by attempting to provide whatever information or knowledge any individual wishes.

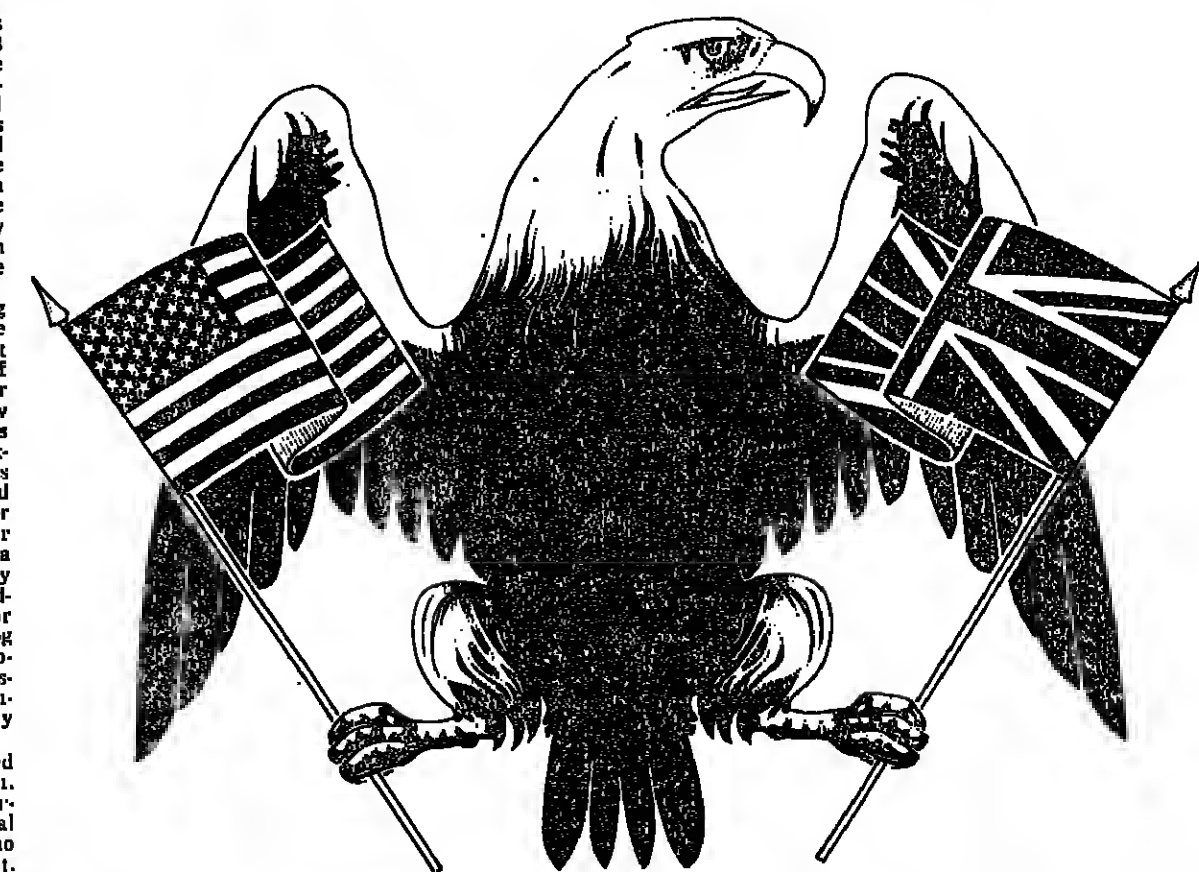
Now, colleges have always served a surrogate role in some extent. They have taken custody of a portion of the nation's youth for several years, and they have provided some housing and some entertainment. But the claimed domain of activity during the 1970s is so broad that, if all-out efforts were made to service everyone, resources would be drained away from the traditional college functions of enculturating the young and providing some vocational and professional training.

Collegiate institutions are essentially conservative, as indeed are all educational institutions. They are created by the powerful in a society to preserve that society and not to produce significant social change. The more far-reaching curricular and instructional changes of the 1970s seem destined to be rejected by most college boards, administrators, and faculty members as being at variance with the historic mission of collegiate institutions.

The new private institutions that have come into existence since 1968 are not likely to last very long, for many reasons, including the fact that they for the most part have violated too many principles involved in institutional survival. Most of these students will now be unemployed teachers, and that he told us what we had to train our own new intake for.

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## 'Core mission is to prepare young for adult society'

Lewis B. Mayhew argues that America's colleges should abandon the philosophy that higher education can be an instrument to change society

Third, many of the new private institutions assume the continuation of a somewhat questionable financial base. They assume that tuition will provide principal income, and they seek to keep tuition high in the reach of potential students, either through the continued availability of state and federal student aid programmes or through reduction of time requirements so that full tuition would be substantially less than if students were required to spend additional amounts of time gaining a degree. As inflation continues, this trade-off of time against dollars could very well produce absurdities.

Educational institutions and educational practices require nurture and support from powerful elements in the society. Landgrant colleges eventually obtained the support from the agricultural interests in the society and grew increasingly strong as agriculture emerged as a mainstay of an expanding economy. The Flexner report (1910) on medical education received immediate support throughout the country from many different segments of society that recognized the need for the medical practice and medical education. The junior college movement was broadly supported because it was democratic in tone but still preserved prestige. The more radical curricular, instructional and institutional changes in the 1970s do not seem to possess a sufficiently powerful set of constituencies to maintain them.

A few reforming academics, some minority and disadvantaged groups, and officials in a few foundations comprise the base. At the same time, these elements have encountered apathy, resistance, or outright opposition on the part of strong, existing institutions, accreditation agencies, the major professions, and political leaders who have yet to be convinced of the economic values.

What appears during the late 1970s is an American system of higher education in which a substantial body of literature emerged urging major new educational practices. A few professional societies, such as the American Association for Higher Education, lent their weight to publicizing the new. Yet, the number of students actually affected remains relatively small. A similarly growing body of literature also deals with structural and organizational changes and these, especially in the public sector, are rapidly being put into effect.

However, it is difficult to discover solid evidence that these changes are in any way significantly modifying how students and professors go about their educational tasks and responsibilities. Education, including higher education, is a social institution designed to acculturate people into the society and to acculturate them with the constantly expanding number of things they must know in order to cope with that society.

It operates on the basis of tradition, partly because so little is really known about how people learn and develop and partly because traditional ways of doing things have not proved unsuccessful. People attend

college, graduate, assume adult roles, and live out their lives with varying degrees of satisfaction or dissatisfaction. Until persuasive evidence is obtained that clearly superior ways of inducing youth into adulthood can be found, the practice of higher education is likely to proceed as it has in the past.

The federal government has no important stake in higher education, and the significance of that stake should be symbolized by creating a Cabinet-level Secretary of Education who could ensure that the voice of education is heard in the highest council along with the voices of diplomacy, war, commerce and labour. However, such a position should not become a Ministry of Education, in the French sense, with power for direct influence over academic programmes throughout the country. Those academic programmes and practices are best determined by constituencies on a single campus.

In this same connexion, it is probably too late to reverse the tendencies in the several states to create coordinating and controlling agencies above the campus level. However, it is not too late for individual campuses in many different ways to reassert campus responsibility and autonomy and to resist extension of centralizing tendencies from coordinating agencies to statewide systems with statewide boards and administrative structures. Perhaps the best arrangement would be moderately strong coordinating committees or commissions whose activities would be legally constrained by specific expressions of domain of purely campus responsibility.

This system or non-system of higher education continues to serve educational, service and research purposes. However, the core mission at all institutions regardless of type, has been the educational mission of preparing the young for entry into the adult society. This primary mission should be continued and if individual institutions have departed substantially from it they should be encouraged to return to an emphasis on the core responsibility. This does not mean that some programmes for adults should not be offered, but they should not be offered if they jeopardize the core function or if they are offered by institutions that do not possess the intellectual traditions and resources needed for extending programmes to many different groups of students.

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Colleges and universities are at their best when they develop skills and attitudes resting on the uses of words, numbers, and abstract concepts. Institutions organized to emphasize other things, such as the joys of gardening, the cultivation of spiritual serenity, or therapeutic self-expression, are not institutions of higher education, even though they may be quite valuable institutions that improve the human condition.

Relatedly, in accomplishing principal purposes, collegiate institutions properly make use of many different techniques, including field work, collection of artifacts, and even remunerated work closely related to academic work. However, the basic techniques should continue to consist of reading and writing, numerical calculations, and practice in developing and using abstract concepts, which are best developed through sustained and intensive interaction between teacher and student and through closely supervised independent effort, so that constant evaluation is done by informed individuals to help students perfect their cognitive skills.

Within the system of higher education in the United States, there should be constant experimentation with methods of instruction, learning, and operations. Most of these experiments should be expected to fail or prove inconclusive, for the practices and processes of higher education change slowly. Out of the welter of experimentation and attempted innovation may come a synthesis of new developments that can change the face of higher education.

Historically, from the medieval universities on to the present (with some notable aberrations from time to time), the transcendent values in colleges and universities have been intellectual, collegiality, civility and the tranquility necessary to study and ponder the human condition in the abstract. These are sound values and should be preserved at all costs. This means that institutions that wish to substitute experience in the day-to-day conduct of affairs for intellectual study should be viewed as something other than higher education.

Lewis B. Mayhew is professor of education, Stanford University. This extract is from *Legacy of the Seventies*, published by Josselyn Press, 28, Dunster St, London, and 615, Montgomery St, San Francisco.











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## KEEP IN TOUCH BECOME A SUBSCRIBER TO THE TIMES HIGHER EDUCATION SUPPLEMENT

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## Junior colleges look to lifelong learning for expanding future

The United States' 1.2 million community colleges are feeling neglected. Although they have been the country's fastest growing educational sector over the past 15 years, they have received much less attention, both in the media and from educationists, than either the compulsory sector or the universities and graduate schools.

The community, junior or two-year colleges, as they are variously known, have not, however, exactly been neglected by the general public. This year their total full-time and part-time enrolment in courses for academic credit reached 4.3 million—compared to 3 million in 1960—and another 4 million are thought to use the colleges for less formal non-credit activities.

However, a recent Gallup Poll for the American Association of Community and Junior Colleges (AACJC) showed much public misunderstanding of their role and the responsibilities of the community colleges. Primary mission was to provide preliminary academic training to enable students to go on to a four-year college or university.

Until the 1970s their main function was indeed to provide two-year liberal arts programmes, parallel to the first two years of a bachelor's degree and ending in the "associate degree". Students could then transfer to university to complete their bachelor's degree programme.

Now, however, this is the least important, in terms of the numbers involved, of the three major types of programme offered by the community colleges.

More than half of their formally enrolled students are on vocational occupational technical courses leading directly to employment in a specific field. These include technical, medical, engineering and business, commerce, accounting and secretarial courses, and public service technologies such as fire brigade and police training.

The third category of activity, which the colleges call community education, involves those in America who use their teachers and facilities for purposes other than obtaining a degree or diploma. These include adult education, cultural events, upgrading job skills, special programmes for women and the elderly, and so on.

These "lifelong learning" activities are what the community colleges are counting on to maintain their expansion through the 1980s while the number of young people of traditional college-going age falls off.

The various elements of lifelong learning are summarized thus by Professor Nathan Glazer of the Harvard Graduate School of Education: "Higher proportion of adults attending colleges and universities; a delay in the beginning of higher education and interruptions in it; running one's own business; many smaller ones; responding to changing needs, need, interest; the use of institutions of higher education to provide new occupational training for those whose old occupations have become redundant; or for new tasks created by technology and society; and the use of such institutions to keep professionals up-to-date, and to teach leisure-time pursuits and satisfy recreational interests."

Community college leaders are therefore becoming increasingly aware about the continuing tendency of legislators, public commentators, even educationists, to judge them by conventional yardsticks, such as drop-out rates and the number of degrees and diplomas awarded.

They get particularly upset when they are attacked by politicians for providing too many "frills" and told to move more basic academic or technical courses.

California's famous community college system, which enrolls nearly a third of all two-year college students in the United States, is under just such pressure from Governor Jerry Brown. He has condemned "frills and entertainment courses" and initiated an audit of the colleges' spending by the state Finance Department.

The colleges say their duty as community institutions is to provide

courses the community wants. As Dr Charles Pappas, President of Ohio's Community College in Cincinnati, put it at a recent meeting of AACJC: "We're all under pressure to get rid of 'frills', but if taxpayers in a community want to take a course, who is to call it a frill?"

"Belly-dancing is one of our most popular courses and I suppose some people would consider it a frill. However, the women who take it enjoy it, find it an art and think it's good physical education."

An example of an eminent educationalist judging community colleges on what they would say were the wrong terms is provided by Professor Alexander Astin's new book, *Four Critical Years*, which analyses the gigantic ten-year Cooperative Institutional Research Programme (CIRP) of the American Council on Education (ACE) and the University of California, Los Angeles (UCLA). He says two-year colleges have much less of a beneficial effect on students than four-year institutions.

"Perhaps the most significant impact of attending a community college is on the student's persistence and implementation of career plans. Even after controlling for the student's social background, ability and motivation at college entrance, the chances of persisting in the bachelor's degree are substantially reduced," writes Professor Astin.

Professor Astin gives two explanations why expansion of American higher education has been so heavily concentrated on the community colleges. "Educators in more prestigious institutions have probably supported community college growth because it represented a way of expanding educational opportunities that did not threaten their own selectivity and efficiency. Legislators have supported the expansion on the ground that community colleges represent a much less expensive possession of higher education. This 'economical' form of higher education, however, may be illusory."

Community college leaders would say that direct comparisons between two- and four-year colleges of the sort that Professor Astin and many others have made are no longer meaningful. They also reject claims that community colleges have high dropout rates.

The AACJC quotes a Florida study showing that if "drop-out" is redefined to include only those students who have neither achieved their educational goals three years from the time they enter a community college nor have any plans to achieve them, the proportion of "drop-outs" is less than 2 per cent.

The association runs several schemes to encourage colleges to diversify their activities. One example is a three-year programme to promote community college cooperation with trade unions, by providing "labour studies" courses for union officials, for example. Another idea being encouraged by the AACJC is the "community forum". Some colleges are already successfully promoting town meetings at which citizens can discuss controversial issues like plans for a new highway or even the Panama Canal treaties.

More than 200,000 teachers are employed by community colleges, though less than half of them are full-time faculty members. Only 10 per cent are thought to have doctorates. However, in 1970 6 per cent had a PhD and it is estimated that by 1980 20 per cent will either hold or be working for one. About three out of four community college staff have a Master's degree.

One community college in two arranges for faculty members in a university-style hierarchy from professor down to instructor; in the other half staff are unranked. Two-thirds of the colleges have on academic tenure system, with probationary periods ranging from two to seven years.

Average salary for teachers in the two-year colleges was \$16,100, according to the American Association of University Professors' survey of academic pay in 1976-77. This is significantly higher than the average in the lowest tier of four-year colleges (those giving Bachelor's degrees only) where the comparable figure was \$14,790.

## Journalism's role as 'golden goose'

Although the glamour of Washington is fading, the number of journalism graduates is far greater than the media and public relations business can absorb, students are continuing to crowd on to journalism courses.

According to the latest survey by Professor Paul Peters of Ohio State University, American colleges and universities in 1977, 1978 journalism undergraduates this year, up 2.1 per cent on 1977. The average annual growth of the previous decade was 15 per cent.

The classrooms are crowded; well as the job market. The student ratio in journalism departments deteriorated from 1:34 in 1970 to 1:33 in 1974/75, despite some faculty recruitment.

Professor Peterson found that about a third of the 183 journalism departments and schools had placed additional restrictions on admissions to prevent staff and facilities being swamped.

After years of riding as media come passengers in the back of the academic bus, journalism departments have finally become too hot to be ignored. Professor David Rabe of New York University has written in *Change* magazine:

"During the present battle in higher education, journalism has unfortunately been thrust into the political quagmire of academics, by which the many unacknowledged demands in the liberal arts," he said.

However, Professor Rubin adds the happy news of academic journalism courses, as well as the Writing Program. Many journalism departments are taking in too many students who do not really enjoy writing, have not been taught to write properly at school and are consequently avoiding almost all writing in the undergraduate courses made available by the departments.

There are signs that some journalism schools are beginning to do something about it, because the future prospect is at stake. While surveys show that up to 6 per cent of journalism graduates are not intent on career in the field, they may have ended in journalism as an interesting hobby or as a career. The remaining 94 per cent would drop the departments if they found their journalistic career by making something else.

## Putting the clock back

American colleges have been living quietly away from the traditional semester system over the past decade and adopting other forms of academic calendar.

The academic year—like so many other aspects of American higher education—has its own calendar. The Registrar of Boston College, its latest annual survey of academic calendars, covering 2,422 institutions, found only 7 per cent still working by traditional semesters.

Ten years ago 83 per cent were using the system, under which students arrive in mid-September and continue classes, with a winter break of a fortnight or so, until the end of May.

Now the early semester calendar is the most popular. The 48 per cent of colleges and universities that have adopted it start the academic year much earlier—some as early as August—and finish some what earlier—usually May. The quarter system, which is closest to the British academic calendar, is used by 24 per cent of institutions. There are three working quarters, which start in mid-September and end in mid-June, divided by two or three weeks' holiday over Christmas and a fortnight at Easter.

The "4-1-1" calendar, a four-month term in the autumn, spring and a short winter term, which might cover the month of January. It is operated by 13 per cent of Mr. Oleson's per cent of other systems such as "trimesters".

## Washington holds jobs key

The federal government is the major employer of graduates in the United States and its role is likely to grow still further

The political stalking horse of the moment in the United States is once again "Big Government". It means, variously, federal bureaucracy, creeping government regulation or a squeeze on the market or profit sector of the economy. It also means jobs for the boys—and the girls—produced by the college system.

For Big Government involves big higher education, and nowhere is this fact more apparent than in the job destinations of the graduates published by the Department of Health, Education and Welfare.

Big Government provides jobs for nearly two thirds of all Master's degree students. At the first-degree level, of the class of 1975 219,500 found jobs in federal government, teaching or state and local administration. Another 54,000 took jobs with foundations and other such bodies in the non-profit private sector.

In the terms of Milton Friedman or even Ronald Reagan, this means 46 of every 100 graduates have sought the market sector. In numbers worse—looked at this way—the federal bureaucracy paid new graduates \$10,000 a year on average, compared with \$9,900 in the private sector (\$9,500 will buy a single person a comfortable standard of living in most parts of the United States).

The rate of graduate unemployment therefore depends on Big Government. The optimistic projections for graduate jobs in 1978 being made by the College Placement Council and the Department of Education in federal jobs, without an estimated 23 per cent rise in the number of federal posts this year, there would be at least one job to a hundred fewer for humanities and liberal arts graduates.

Teachers, nurses, and engineers are concerned—as far as graduates are concerned—with the state for their livelihood. In 1974-75 nearly a quarter of all graduates (22,000) were qualified to teach; of the 37,800 who actually applied for jobs that year just over half were successful.

The fall in teaching opportunities in the next few years—far demographic, if not political, reasons—will reduce these figures significantly. The government estimates that the demand for extra teachers between 1976 and 1977 is only two thirds that between 1971 and 1975.

Yet such figures can give a misleadingly gloomy impression. Teachers are by no means as badly off as some other graduates, says Dr Mark Borinsky of the National Centre for Education Statistics. He has calculated that the rate of underemployment among those qualified to teach—the number who end up in jobs requiring qualifications lower than a degree—is less than the average. And teaching salaries, for those who get the jobs, compare reasonably well.

Indeed, the general picture of graduate employment, if not quite rosy, gives little cause for concern. Last year while the rate of unemployment among the 16 to 24 age

group was more than 12 per cent, unemployment among college graduates was estimated to be about at the level of general unemployment—around 8 per cent.

Within the national debate about social policy, it has been school leavers, especially minorities, who have been the focus of attention—ones out of work. In contrast with Europe, there has been little discussion of underemployment or quotas on entry to professional schools except for Medicine.

Generally, it seems, that "market mechanisms" have worked. During recent years intending students have accurately estimated the value of the demand for their services and, in large and the products of the colleges have meshed with economic opportunity.

Rates of graduate unemployment are lower than those for high school pupils. In 1974 and 1975, for example, when the overall unemployment rates were 5.6 per cent and 8.5 per cent respectively, the rates for recent high school graduates were 9.8 per cent and 13.6 per cent while the rates for recent college graduates were 4.5 per cent and 8.3 per cent.

"Market analysis agree that there still exists a positive return to investment in post-secondary education and that the returns are greater if the education is completed," says the survey.

This kind of optimism has been based in the past two years by the work of the College Placement Service and university careers services which show convincingly that the recovery from the recession of the early 1970s is speeding along as far as graduates are concerned.

An annual survey of employers completed by Mr. Frank Cuddeback, retired director of placement and career services professor at education at North-Western University, found that business and industrial firms plan to take on one graduate in six more than last year. It is a good year to have an engineering degree, but not a good year to have a non-engineering degree. There will be half as many again jobs for PhD engineers this year as in 1977.

In the case of engineering, the "market mechanism" appears to work. A glut of graduate engineers a few years ago was followed by a reduction in applications, raising higher earnings for starting engineers, which stimulated a renewed interest on the part of undergraduates. The average monthly salary being offered to starting electrical engineers in 1976-77 was \$1,389 compared with mathematics' \$1,073 and social scientists' \$863.

A boom in accountancy is now on with good job prospects stimulating double and treble the number of students of a few years ago to apply to university to study the subject. The American Institute of Certified Public Accountants reported last year that the number of first degrees in accounting has grown from 20,800 in 1971 to 44,100 this year and by 1981 it will reach 50,000. As a student in accountancy said: "I don't think anyone takes accounting because they love it. It's because of what you can do with it."

A smaller boom has been noted in the range of courses that come under the heading of public affairs and services. The National Centre for Education Statistics predicts that the number of undergraduates completing their degrees in public affairs will increase from just under 40,000 last year to more than 60,000

by 1985—this compares with barely 10,000 a year in 1970. By contrast, English has dropped from 73,000 undergraduate degrees in 1971 to 51,000 in 1976 and an estimated 35,000 in 1985. Humanities in general, which cover popular courses such as communications, show a fairly stable pattern with total numbers staying around 140,000 degrees a year.

This "boom and bust" pattern of courses does not hold for the new arrivals on the academic curriculum, notably computer science. The new courses are that the subject will double in size by 1985. Computer specialists are second only to engineers in their initial earnings potential.

Perhaps in response to increasing signs of anxiety within the American Bar Association about a "flooded" profession, the government projects that LLBs will level off this year for the next eight or so years. Holders of the degree have doubled since 1969.

The key to graduate recruitment is, of course, students' expectations. There still circulate horror stories about PhDs doing manual work because the academic jobs they aspire to are not available. In fact, students at all levels have unrealistically high expectations.

Surveys of unemployed graduates show that over half have high expectations and many others might have found work if they had really wanted to. They had turned down at least one job offer, had looked for work for less than two weeks, had looked only for part-time work, or had relied on their spouses who worked.

The picture for PhDs who expect academic jobs is not bright. The American Historical Association, for example, recently estimated that the number of full-time academic jobs available in history had declined by a third in the past few years.

But such figures, of course, conceal much "underemployment". Of the undergraduates in 1975, a quarter were underemployed and went on to take jobs which did not require a university degree. Another 25 per cent were in jobs for which it was impossible to say whether a degree was actually needed. Only half could be said to have jobs commensurate with their education. Underemployment was found to be rife among humanities and social science graduates, undergraduates who specialized in education were much less likely to become underemployed than mathematics, physical and biological scientists and psychologists.

This degree of underemployment means, however, that American students are much more flexible in their job ambitions than, say, their counterparts in Europe. The very high level of graduate unemployment in jobs, for example, arise largely from the expectations university students have about the job market.

The low rate of graduate underemployment in the United States is increasingly underwritten by the rate of expansion of government. The parallels with Italy are close. Congress thus faces a paradox. The mood of the moment—witnessed by the defeat of consumer protection legislation—is against Big Government. But it is in favour of extensive aid to students' parents.

It could be that the students encouraged in their higher education by measures such as the tuition tax credit will face problems if Big Government does not continue to expand and recruit the products of the universities and colleges in large numbers.

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Graduate teaching jobs remain heavily dependent on national policies.



# Campuses accept that federal involvement is here to stay

The United States government spent \$11,800,000 on education in 1976. President Carter's 1979 budget included \$4,600m just for the higher education programmes of the Department of Health, Education and Welfare (HEW) and a further \$3,600m for federal support of research and development in universities and colleges.

It is worth giving a historical perspective to this huge expansion of the federal stake in the academic community before considering its effects on university life.

The early colonists' distrust of strong central government lingered on most strongly in the conduct of education. "For the first 150 years of the nation's existence, the degree of federal intervention into education was so sporadic, limited and unobjectionable as to require only minuscule federal staff to handle the modest financial and large land transfers, and no constitution, philosophical or organizational problems seemed to present itself," writes Rufus Miles, senior Fellow in Princeton University's Woodrow Wilson School of Public and International Affairs.

The constitutional separation of church and state, combined with the preponderance of religiously supported schools and colleges, reinforced the colleges' desire to be free of government interference.

In the 1860s the government handed over cash grants of public land to the states to establish land grant colleges directed primarily towards the agricultural and mechanical arts—the forerunners of today's huge state universities—and created a non-Cabinet "Department of Education" which was soon renamed the Bureau of Education and later the Office of Education.

But neither step heralded major federal interference in university and college affairs, for the states were allowed to run the land grant colleges as they wished, and the Bureau of Education did no more than collect statistics and report on the condition of education in the United States.

Even the pressures of the First World War produced little government intervention, though it is interesting to note that the colleges themselves expressed a patriotic wish for Washington to become more involved. "The Association of American Colleges called on President Woodrow Wilson to take steps looking towards the immediate comprehensive mobilization of the educational forces of the nation for war purposes under centralized administration, which would coordinate effort and stimulate defensive activities."

John MacCracken, President of Lafayette College, told the association: "There is a widespread feeling that American education is not organized to make its greatest contribution to the war. The experience of the past six months has shown that the need is twofold: first the need on the part of the government, second the need on the part of the colleges—that in both cases the need is not so much for unity of spirit and purpose as for coordination which is unity in work."

But it took President Roosevelt's New Deal policies of the 1930s, and the assumption by the central government of many functions that Americans had previously thought of as state, local or private responsibilities, to bring Washington into the world of education.

The Second World War saw a boom in government sponsored research and training. After the war the "GI Bill of Rights" gave

demobilized soldiers hundreds of millions of dollars to spend on higher education.

It was the launching of the Soviet Sputnik satellite in 1957 which jolted American politicians, educationists and scientists into a furious competitive reaction. United States government expenditure on all forms of research and development soared from \$1,000m in 1955 to \$16,500m in the peak year of 1967.

Thereafter partial public disillusion with science persuaded Congress to turn down the flow of federal funds, and research expenditure fell back in real terms over the next seven or eight years. By 1976, however, scientific lobbyists had persuaded Congress and then Jimmy Carter's White House that the level of basic research had, in Carter's words, "fallen far too low over the past decade". The President's 1979 budget, announced in January, included a 5 per cent increase in basic research funds.

The build-up of the federal student aid programmes came later than the research boom, starting during the Kennedy-Johnson years of the 1960s, when entry of access to higher education became a government priority. The primary mission of federal higher education programmes is still, in the words of the 1979 US Budget document, "to improve the quality of post-secondary education for students of varying economic backgrounds."

By the mid-1970s financial assistance to students had comfortably overtaken research grants and contracts as the largest source of federal funds for higher education (see table below), and the gap will widen further over the next few years if Congress passes the student aid extension announced by President Carter last month (THE TIMES, February 17).

Washington wisdom now generally accepts middle-income families as a class that needs help in paying college bills (more than \$2,000 a year in the most prestigious private universities if all Americans are in enjoy equal educational opportunities, just as poor students were accepted as a needy group 15 or 20 years ago).

As the principle of federal aid for higher education has been established, Congress found itself besieged by a growing army of educational lobbyists (though perhaps rabble would be a better word than army to describe the many specialized groups seeking funds for their own separate interests).

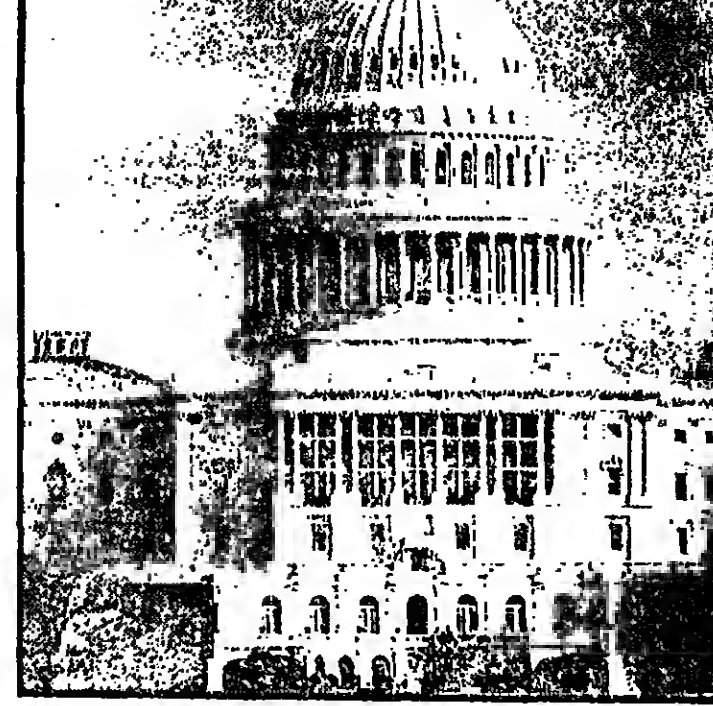
As Rufus Miles puts it: "There developed the classic triangular relationship between the narrow specialized lobbies, the subcommittees of the Congress, and the specialized programme managers of the executive branch, each of which is benefited by the efforts of the other two. Congressmen gained more credit with their constituents when they passed many earmarked grant programmes than they would have if they had passed one large 'block grant'."

The result was—and is—a chaotic mass of unrelated, uncoordinated federal programmes in direct national funds to meet allegedly national needs that local, state and private organizations cannot or will not deal with. In 1974 the College Entrance Examination Board identified 439 separate federal programmes giving money to higher education either directly or through students.

The Carter Administration is trying, as the 1979 Budget document says, to cut out some of the redundant programmes by shifting the focus of higher education aid to direct support for example, by asking Congress to cut the co-operative education and university community services programmes.

But these programmes all have their lobbyists which will try to deflect the axe—and at the same time HEW is proposing to fund new institutional support programmes, such as grants and loans, to help colleges improve access for handicapped students, conserve energy and strengthen research libraries.

The combined burden of all these federal education programmes and research grants weighs so heavily on universities in three distinct though closely related ways.



The Capitol: centralized decision-making in higher education is actually increasing.

First, there is the sheer cost of administering them all. Second, institutions and individuals have to account to the government, sometimes in great detail, for the way they have spent the money. And third, the government uses its grants—at the threat of withholding them—as a weapon to force institutions to implement its social and political policies, notably civil rights rules and regulations.

Studies have indicated that the cost in higher education of administering federal programmes and coping with federal regulations may have risen 10 or 20 times in the past decade or so, to at least \$20m a year.

For the past year or more, leaders of the major granting agencies and government departments have been pushing to simplify and reduce the paperwork involved in dealing with their programmes.

Mr Frank Press, President Carter's science adviser, says the major universities might save millions of dollars each if he is able to take some of the paperwork out of the federal research-granting procedure. HEW (which controls the National Institutes of Health and the National Science Foundation) are actively looking for ways to simplify their grants processes.

Of course, the current political pressure for more and more accountability in the expenditure of public money conflicts with moves to reduce the detail and frequency with which the academic community has to account for the way it has spent federal funds.

And unfortunately higher education's case has not been helped by recent publicity given to HEW audits showing that universities have not been accounting properly for research grants worth hundreds of millions of dollars (THE TIMES, January 20).

Such publicity, says Mr Max Binkley, vice-president for finance at Colorado State University, "leads the public and Congress to believe there is need for tighter control than now exists over federal funds administered by universities. In this circumstance higher education can hardly expect favourable reception when it contends that controls are already too rigid and too cumbersome."

There are less than 100 universities in the United States which are already too rigid and too cumbersome.

Public support of public and private institutions of higher education 1976-77

Source of support	Total amounts (billions of dollars)		Amount per student (dollars)
	public	private	public
State and local funds	16.7	0.6	2,660
Federal funds	9.3	4.7	1,480
Research	2.0	1.5	320
Student aid	5.2	0.9	835
Other	2.0	0.9	325
Tax exemptions	4.8	2.6	760
Grand total	30.8	7.9	4,900

Table derived from data compiled by Carnegie Council on Policy Studies in Higher Education.

First, a disclaimer. I am not predicting a steady state university. We do not know whether, beyond about 1986, the British university system will be static, contracting or expanding. All we can say is that the assumptions necessary to produce an expansion look, in 1978, very unlikely; and that the existence of academic tenure makes any precipitate contraction very difficult to achieve. Thus there is sense in looking at the implications of keeping the system at a constant size with, say, 340,000 to 350,000 students, and that is what I shall be talking about.

But a system of constant size will not be, in a technical sense, in a "steady state". The age distributions for different universities and different subjects would be changing. If, for instance, all professors and lecturers in Coptic will be aged over 60 in 1980, while all professors and lecturers in Swahili will be aged under 50, it is a fair guess that in 1990 the Coptic age distribution will have suffered a violent change towards youthfulness, while that for Swahili will be, near enough, 10 years up the age scale. In subjects where there is active movement to or from non-university jobs, other large changes may have occurred, and some will have altered the balance between subjects. If accounting studies become less popular, which is not very likely, there would be no difficulty in "losing" some staff to jobs elsewhere, and some resources would become available to expand other subjects.

Furthermore, those universities which expanded fast in the 1950s and early 1960s will have quite a lot of retirements between 1986 and 2010: so they will be able to use the control of replacements to give themselves flexibility. Universities like my own, which expanded in the late 1960s and 1970s, will have very few retirements at full age during the present century; but, of course, if there are retirements from senior positions in other universities, we shall expect some members of staff to wish to move in order to obtain promotion. So we are not entering an Arctic night, in which everything will be frozen and inflexible. More accurately, the problem will be that the extent of flexibility is likely to be a good deal less than is needed to meet the changes in which the university system ought to adapt.

Those changes are most easily visualized as changes in student preference. This is not entirely satisfactory, because universities are not factories to produce graduates: if the fall in the number of physics students has released the energies of staff to pursue valuable lines of research, this may offset the loss due to their underemployment in teaching. However, the other side of this is that people who might be contributing more to knowledge which the community needs, such as the accountants, may be overemployed in teaching because we are unable to find resources to transfer in meet rising numbers.

The fall in student numbers for a particular subject in a particular university can easily amount to 25 per cent over five years, and this fact extends the likely flexibility in staff numbers. Consequently expanding subjects will be starved of resource: it will be as if the conditions of 1975-77 had become permanent.

I will leave to others to explore what might be done about this in the field of staff policy—by early retirement, retraining, or a straight attack on the institution of tenure, which assumes the world to be far more invariable than it is: remarking only that what is likely to be achieved, in this difficult and politically contentious area, is far less than would be needed to provide adequate flexibility. In consequence there may begin to be substance in the accusations that universities are out of touch with the needs of the community, and this may make things worse, since this remoteness can be used as an excuse for denying funds.

It is an accusation often brought against the directors of research laboratories that they do not know when to stop pursuing a line of research: at what point, that is, the diversion of resources to a new subject would yield a higher productivity. Therefore, unless they get a constantly expanding supply of funds, the average productivity of their work tends to fall.

But the problem which faces those who manage universities is much worse. A teaching activity cannot be cut off by a sudden decision, but must be continued to provide for students already on course. Phasing in a new course as yet phase out an old one almost always implies a considerable increase of work. The new course may also require new skills, not present in the existing staff. Hence the successful establishment of a new course commonly requires some lubrication by the grant of extra resources, and, if these are not available, it is easier and safer not to innovate. Nor can it be expected that the urge to innovate will be growing, since the average age of university staff will be rising, and many may feel that the established pattern of work may well last out their time.

The problem of finding resources to innovate belongs, of course, to departments which are already fully loaded or overloaded. In departments which have sufficient (in many universities), there should be enough flexibility to allow for innovation. But the desire to seek out change does not always go with the ability to achieve it. I have recently had separate discussions with each of the subject-departments of my university about their future plans, and, of course, for a steady-state period but for a period of expansion. Naturally enough, the liveliness of new ideas and the



Charles Carter starts a series

sensitivity to changing needs differed greatly from one department to another. Broadly, however, the innovative spirit was most present in small departments, in those which have the greatest degree of democratic participation by all members of staff, and with a few exceptions, in those already carrying heavy loads of teaching. The lightly loaded departments were in general much less productive of new ideas.

It is, of course, possible that the recession in some subjects has been made deeper, or has gone on longer, because the lack of an innovative spirit has been felt by the schools and by the community in general. If that is so, such subjects will have gained the classroom to innovate only by becoming so dull that innovation is unlikely.

When the new universities were set up their vice-chancellors, now the most senior of their short-lived ranks, were invited to join some of their more experienced colleagues for a conference at a delightful spot on Lake Como—perhaps the purpose was to identify and tame any demons lurking, in which case the conference was only a partial success. I remember saying on that occasion that the real test of a new university would come after 10 years, when it had invested a lot of intellectual capital in courses and systems, and no longer had the stimulus of rapid growth and fresh beginnings.

The whole British university system now faces a similar test. Can it increase its rate of innovation and adaptation, despite having fewer resources with which to encourage the process? Can it do new things when it is very much easier to go on in established ways?

The previous paragraphs suggest various reasons for pessimism. They apply with particular force to the extension of the academic map to include entirely new subjects. Several new areas were colonized in the 1960s, but each required a major investment, taken from expanding resources. Any similar proposal would be met now, and still more in the 1980s, by the growth of underfunded areas already in the margin.

However, there is no such thing as an academic subject which is unrelated to anything else. It might, indeed, have been better in some cases if, instead of inventing entirely new subjects, we had been content to allow their area to be conquered by gradual settlement from adjoining disciplines. That will have to be the plan during the remainder of this century, unless earmarked grants or private benefactions are available on a considerable scale.

It would be wrong, however, to carry our pessimism too far. To some extent it is possible to stimulate innovation, even in the most unfavourable circumstances. First, a university must seek to improve the flow of information from the outside world. What is happening in universities in other countries, or in polytechnics and higher education colleges in our

men? What trends can be seen in the schools, either in the interests of pupils or in the extent of their preparation? What are employers saying about graduates? What can we learn from those who study technological or social trends, about the future years in which graduates will serve the community and university research will help in its development?

There is, as all vice-chancellors know, a weak spot in academics: though capable of being quite as irrational as any other group of men and women, we are particularly rational, so we find it difficult to ignore a set of facts presented with appropriate academic care. Our ability to pursue, with satisfaction, an irrelevant path depends on being isolated from the facts of the world around us. So the breakdown of that isolation will help to produce change.

Second, somewhere in the university there should be a person whose job it is to question and re-examine its systems. As all readers of *Microscopica Academia* (P. M. Cornford, 1968. Required reading for all academics, as I learnt from Lord Ashby) will know, there are a number of well-established university procedures for preventing new things happening. In a particular university, these procedures work through complex structures of committees and administrative systems. These structures commonly inhibit innovation. The proportion of innovations which survive in a viable form after consideration by eight or nine committees is negligible. So someone has to ask why the structure itself exists; why it cannot be made much more simple and expeditious; why it might not be possible, just occasionally, to let an individual get on with his own ideas untrammelled by any committees.

Third, somebody or some group of people have to give time and feel responsibility for the full development of new ideas. Characteristically, even the best and most relevant innovations come forward half-baked; and, indeed, this provides a chief means by which persons of a conservative spirit ensure that nothing gets done, since they can draw attention to the inadequacy of the proposal or to the failure to go into all its implications. If a university wants to continue to innovate and adapt in unfavourable circumstances, it must make sure that new ideas are not wasted in this way, but are worked up and developed into sound and consistent schemes.

I suggest, too, that in preparation for the 1980s the universities should develop a more independent spirit. In recent years there has been some tendency to act as if we were all governed and directed by the University Grants Committee. Now, of course, in relation to any new development which requires a great deal of money (and, in particular, a specialist building) the UGC has the whip-hand. On all other matters, however, the committee should be seen as a helpful source of information, and no more.

Centralized control will never produce an adequate adaptation in the needs of society: it is essential that we should remember that we are free agents, under our Royal Charters and that a sensitive response to changing circumstances is much more likely to come from the diversity of free enterprise. Beware of the vice-chancellor who says: "The UGC won't let us do this"; he may be using the UGC to stymie something which he does not like, but every time the argument is used we sacrifice some of our liberty. Freedom is kept only by exercising it.

Finally, I think it would be wise in approaching the period of no growth to have a hard look not just at the complexities of internal structure, but at the general principles of university government. The UGC in one of its reports expressed disappointment at the lack of innovation in the government of the new universities. This was rather unkind, since we were all sent model Charters and Statutes, and naturally deduced that we were expected to follow them: but the criticism nevertheless has some point.

The fundamental objection to the system of university government which has grown up in this country is that academic matters, both in teaching and research, are left in the decision by academics, and are thus insulated against any new ideas which might come from those who work in other occupations. Therefore the inflow of thought, which might stimulate innovation and adaptation, is restricted.

Outside Oxford and Cambridge, lay members in the English universities are allowed to help with buildings and finance and staff welfare, all matters on which their advice is greatly appreciated, but it is assumed (without the slightest justification) that they would be less helpful in discussions of what society expects of the education of graduates. It is time that we brought the expert lay element into the discussion of academic matters: this might lead to a unicameral system, which does not appear to have been totally disastrous when tried in Toronto, but those who regard this as too dangerous an innovation might perhaps consider putting at least as many lay members on Senate as there are academic members on council.

To sum up, then: to maintain academic quality and relevance in an aging community which no longer has the stimulus of growth will require a deliberate exposure to outside stimuli and a deliberate encouragement and development of new ideas to the point of effective application. I offer as a motto to hang on the walls of the new Vice-Chancellors of the 1980s—NEVER PLAY IT SAFE.

The author is vice-chancellor of Lancaster University.

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## BOOKS

## A new voice for the anti-positivist chorus

Meaning and the Moral Sciences  
by Hilary Putnam  
Routledge and Kegan Paul, £4.95  
ISBN 0 7100 8754 3

This, as one would expect of Hilary Putnam, is a bright and bracing book. It consists of Professor Putnam's John Locke lectures, given at Oxford in 1976, plus three separate papers, two of them previously published. The book is written for philosophers but it will undoubtedly command an audience among social scientists also. While the primary concern is with epistemological realism, this doctrine is quickly connected with issues in the philosophy of science and the philosophy of literature.

Since it is not easy to summarize or assess such a book chapter by chapter I propose to break down what Putnam has to say into a number of theses. The exercise is hazardous but it may help to give readers an idea of what is in store for them.

1. Realism is an empirical theory about the status of truth claims.

As a picture of scientific theory realism is usually contrasted, on the one side, with the instrumentalist view that such theory is only of operational significance, and on the other side with the phenomenalist view that such theory makes truth claims at all right but only in respect of observable reality. Within this frame of opposition, realism is seen to represent scientific theory as making truth claims about observable and perhaps unobservable things.

Putnam thinks that historically the instrumentalist and phenomenalist programmes for reducing the meaning of scientific propositions have failed and that realism, the "natural" view of scientific theory, remains so far undefeated. But he here introduces a more subtle "naturalistic" form of anti-realism, according to which all that "truth" means is "probability from accepted postulates". He shows that the doctrine can help itself in the natural concept of truth as defined in semantics and the questions then from realism, and now is argument to be joined between the two doctrines.

The second question is considered in the following three theses. As to the first question, the answer is: the fact that the realist claims, and the "naturalistic" denies that a statement can be false even though it follows from our theory. The answer for Putnam is the core of realism: a coherent claim in the defence of which we must mainly consult empirical facts.

Within the lectures proper Putnam has this more to say about the empirical nature of his realism but in "Realism and Reason" the paper included in the volume, he distinguishes such realism from o-

metaphysical form of the doctrine. The paper, as he notes, represents a refinement in his thinking but it is not, I think, a major revision. Metaphysical realism holds that it is conceivable that a theory should be ideal in every epistemological respect and yet be false. This possibility Putnam regards as incoherent, and he defends the less radical possibility associated with empirical realism.

2. The source of realism is a causal theory of knowledge.

If it is granted, as it surely must be, that realism is the view we naturally take of truth claims both in common sense and in science then we may wonder why we do not. The reason, Putnam says, is that we hold by the empirical belief that knowledge is the result, at least in most cases, of a causal interaction between knower and known but that the interaction is of such a sort as to allow of unrecognized error. Such an error is incompatible with an "instantaneous" definition of truth, for it entails that a sentence might be provable from accepted postulates without being true. Thus the question as to how we can argue the realist case against anti-realism passes into the question of how we can defend a causal view of knowledge.

3. This theory of knowledge recommends itself as explaining the convergence of scientific theory and the contribution of language use.

There are at least two important facts which Putnam believes, that the causal theory of knowledge, and the associated theory of truth, explains. The first is the fact that scientific theories converge, earlier theories being depicted as limiting cases of later. Such convergence is not surprising if the development of theory occurs under the causal influence of reality and if theory seeks to say how reality is. The second fact explained is that language-games as we so to intervene in the world as, generally, to achieve our goals. If in using language we were not seeking to represent how things were, in causal response to those things themselves, then the language, at the least, would be a fruitless exercise.

This second explanatory function is discussed in "Reference and Understanding", a paper written after the lectures and included in the volume. In that paper Putnam delves in to what we understand in using sentences, and may only be the appropriate conditions of their use. Thus he naturally insists that the realist assertion is explication of such a truth content is explication of the success of our non-instrumental behaviour.

4. The convergence of scientific theory appears once we apply the benefit of doubt in interpretation.

It may be said that the work of Kuhn and Feyerabend has shown that scientific theory does not converge since significantly different theories are incommensurable. One

argument has it that since for example Bohr's early description of the electron was different from his later, the two theories in question must be different theories by "theory" and are not really in conflict. Against this Putnam says, simply plausibly, that the appropriate translation strategy in discussing the earlier from the point of view of the later theory would be to give the earlier theory the benefit of the doubt and to refer to the later although getting things wrong about it. This after all is the strategy pursued by Bohr himself.

We may comment that Putnam actually makes a stronger claim in his still earlier writings, a claim which he still avows here, but makes an unnecessary use of. This is the essentialist thesis, not just that some of a theorist's beliefs may be ignored in assigning references to his terms (the principle used above) but that the terms denoting natural essences independently of the beliefs of those who use them. It is not clear that Putnam realizes that the weaker claim is sufficient for his purposes: a pity since the stronger one is much less well-founded.

5. Interpretation involves presenting what the language-user does as rationally explicable.

The topic of interpretation is of intrinsic interest to Putnam and, as we shall see, central to his philosophy of science and his view which he adopts, though with much argument, is that in interpreting someone's utterances we should construe the terms he uses that, assuming he has psychological states, he should say the things he says and, assuming that he believes those things, that he should do the things he does. This principle of interpretation, sometimes described as maximizing the linguistic of the speaker, is accepted in slightly varying forms by a great number of contemporary philosophers. It means that interpreting utterances cannot be isolated from the more general enterprise of making sense of the speaker's performance, verbal and non-verbal. An example of the principle at work is, naturally, the translation from within Bohr's atomic theory of his early term "electron" as referring to the electron of its later counterpart, taking benefit of doubt in such a way as to maximize linguistic humanity.

6. Explanation is interest-relative and introduces indeterminacy to the interpretative procedure.

At this point Putnam makes contact with Quine, finding reason for acknowledging the indeterminacy of translation. The indeterminacy thesis has it that with respect to two or more pragmatically successful translations there may be just too complex for us to know which is the correct one. Putnam agrees that this is right; it may be equally correct, so far as the focus on linguistic behaviour is concerned, to say that the translation might be said to derive that information.

Putnam finds reason for believing this in the fact that, depending on what our interests are, we may wish to explain a speaker's total performance, and thereby introduce his utterances, in one way or another. "Why did so-and-so not bank?" There is an answer which would be given to a priest from that which a kumar might elicit. And similarly there may be an issue of objective right or wrong in distinguishing the terms of interpretative explanation from another. There may be no fact of the matter as to whether the speaker in any given utterance means what the one scheme has him mean or what the other has him mean.

It must be noted that this argument, if it is found persuasive, is in much less indeterminacy than Quine's, since it is plausible that human beings share a basic set of interests sufficient to select a single appropriate pattern of explanation. Indeterminacy would arise in respect of alternative patterns which only Martians could find appealing. An essential difference between Putnam and Quine on the topic is that Putnam countenances not just verbal behaviour as appropriate evidence for the explanatory interests of the interpreter, but also non-verbal behaviour, like the things he does, and, ideally, but like them, the things he is subject to the vagaries and ambiguities of imperfectly perceptible.

Putnam's is a new role-changes of discontents from the view of social science, an impression of this book represents a first attempt at answering the question: what is the answer as to social science being respectful to facts of verbal response, that indeterminacy is true.

7. Interpretation can be made scientifically precise: it represents a form of practical knowledge. Putnam suggests that in practice translation is made easier by the assumption of shared interests between speaker and interpreter. But might these interests not be rigorously defined so as to render the translation procedure exact and not vague? They could be defined in a general way, says, only if we had a general, and reasonable, model of the human being, something which we cannot expect to have in our foreseeable future and something which may be too complex for us to know. Putnam agrees that this is right; it may be equally correct, so far as the focus on linguistic behaviour is concerned, to say that the translation might be said to derive that information.

8. In this respect interpretative knowledge is available through science.

In interpretation, as in all other such understanding proper, the interpreter is not a passive recipient of information, but an active participant in the process. Putnam, in that the scientific opinion of the study of the human mind is not a passive recipient of information, but an active participant in the process. Putnam, in that the scientific opinion of the study of the human mind is not a passive recipient of information, but an active participant in the process.

Putnam is anxious to see all traces of so-called scientific method from such social science, and it is a result of this that he is equally shocked by the scientific method of the social sciences, like the things he does, and, ideally, but like them, the things he is subject to the vagaries and ambiguities of imperfectly perceptible.

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Towards the Comprehensive University  
by Robin Pedley  
Macmillan, £7.95 and £1.95  
ISBN 0 333 23348 4 and 23349 2

When it comes to educational policy, Professor Pedley has always had his nose in the right, i.e. left, direction. He wants a society of good and knowledgeable citizens. To this end he infers that we should put ourselves to school as early as possible for as long as possible, and follow a curriculum which will make us all full participants in an elevated common culture of the arts, sciences, and social studies. Professor Pedley is grateful to the post for his own education and appears to see no ultimate limit to the power of organized education as a means of our enlightenment. Looking back he is justly proud of his own admirable labours in developing comprehensive primary and secondary schooling.

Now, he argues, we must go on. Towards the Comprehensive University. He expects, in a preliminary note, that the majority of his colleagues will dissent from his proposals, and, in this at least, I am sure he is right. But let us first look at his plan.

Pedley sets out a programme for England and Wales in the 1980s covering all forms of education after the statutory school leaving age of 16. He assumes, realistically, that

the education of the 16-18 year olds will go on in the three forms already established—schools, sixth-form colleges, and further education colleges. For this age group he wants the Government to provide a framework with six main features:

- common regulations regardless of type of institutions;
- incorporation of full and part-time study in all three types of institution;
- mandatory student grants;
- development of part-time employment and compulsory release for employers of young people to take courses of their own choosing without penalty;
- equality between institutions in money, staffing, and working conditions;
- monitoring of the schools and colleges conformed by the National Foundation for Educational Research.

Many of those responsible for both education and work will welcome a bold and simple proposal for improvement in a dark and disorganized stage of life in modern Britain. Energetically pursued, such a programme could give us all but a serious attack on the dispiriting structural features of the modern economy—youth unemployment with its high economic, social, and psychological costs, and its cruel inequality. Pedley does not work out the budgetary implications, but I suspect that, if there were a Guala Reim in England, he could show that taking into account the costs of unemployment and the social services concerned with 16

in 18-year-olds, and allowing for the fall in fertility since 1965, no ambitious programme of this kind might be a reasonable financial proposition.

So far so good. The Pedley programme would amount to a further consolidation of comprehensive secondary schooling, the honoring of promises made to adolescents since the 1918 Education Act, and, above all, a coherent set of national arrangements for the passage from school to work for the vast majority. Yet none of this need imply the idea of a comprehensive university. What it would do is to provide a more universal and equitable base for education beyond the age of 18. In fact this is what Pedley has in mind. He would set up an integrated system of adult education into which every form of college of adult education—universities, polytechnics, colleges of education, evening institutes, would be incorporated. The comprehensive universities, he estimates, would number about 100 with, on average, about 8,000 full-time and 9,000 part-time students, drawn from a local population of half a million. They would be local and would be local in their content, through a Council of Education, which would be a dispiriting structural feature of the modern economy—youth unemployment with its high economic, social, and psychological costs, and its cruel inequality. Pedley does not work out the budgetary implications, but I suspect that, if there were a Guala Reim in England, he could show that taking into account the costs of unemployment and the social services concerned with 16

Grants Committee responsible for the whole post-18 system, replacing the present mess of central and local financing for all the different types of institution.

Again, a simple logic emerges, and its attractions are obvious. The obstacles to its realization are no less obvious, and here the shortcomings of the book are considerable. In the first place, Pedley asserts rather than demonstrates the connection between education and economic efficiency as if the critical literature of the last decade could be ignored or dismissed as "black paper" prejudice. But the simple reassertion of the received doctrines of the 1950s concerning education as the engine of economic growth will not persuade Sir Kenneth Williams, let alone Mrs. Thatcher or Sir Keith Joseph. Even the much stronger argument for education as an indispensable aid for forming and maintaining a citizenry capable of participating in a modern democracy has to be carefully argued, as it requires an effort of immensely greater scope than Pedley has permitted himself in this slim volume.

In the long run universities in particular, and adult education in general, require the difficult justification of a research institution as advocated in Thorstein Veblen's classic work, need to be argued before a practical blueprint is put before us. So, though my sympathies are wholeheartedly with Pedley's intention, I fear that much wider and deeper argument will be needed if our colleagues are to be persuaded.

A. H. Halsey

## Taking disciplinary action

Academic Departments: problems, variations and alternatives  
by Dean E. McIlwain and associates  
Jossey-Bass, £10.50  
ISBN 0 87589 307 4

Dean E. McIlwain is the chancellor emeritus and professor of comparative government emeritus of the University of California, Santa Cruz. We are told that he was born with his feet in the sand in Santa Cruz mountains, very nice hills, as he says, in this instance, a group of deans, presidents, principals, vice-chancellors, and professors of American colleges and universities. One associate is only a professor and the other is now principal of an English university.

The book is heavy with administrative and executive experience acquired in some very eminent universities. It all leads the reader to expect a definitive treatment of a difficult subject. The reader will be disappointed for the book is superficial with a number of important flaws. At £10.50 it is aimed at institutions where it will sit on library shelves.

The book is in three sections: part one deals with departmentalism and the essays include a defence and a critique of its shortcomings. Part two contains five essays, four of which are descriptive case studies of variations and alternatives to the departmental system in American universities.

The fifth essay contains the whole of the British experience. Although well presented and containing descriptions of Oxford, Cambridge, Lancaster, and York, the essay against the case of Evergreen State polytechnic and colleges of education from the British experience makes the structural imbalance even more marked.

The final section adds little to the volume. The editors claim that the two essays synthesize the themes of earlier chapters but in fact the earlier chapters are so varied and uneven, with no unifying analytic framework, that no synthesis is possible. The place by Douglas Brown introduces a new theme of leadership and Dean McIlwain's concluding chapters are a summary form many of the important points of earlier chapters.

The most fundamental confusion occurs on the basic question of what is a department? The answer to this question is so self-evident to the writers of the early chapters

that they ignore the problem of clarification and proceed on a shift of commonsense notions that shift in meaning both within and between chapters. Martin Trow comes closest to revealing the confusion. He says that departments are based on disciplines and disciplines "constitute a kind of moral community, centering on the powerful norms implicit in the canons of verified science." It is not only and seldomly methods and procedures, but many disciplines do not contain this consensus.

In addition, some disciplines are recognized as such in some universities and some countries and not in others. Is education a discipline? Is psychology a discipline or are experimental psychology, social psychology and developmental psychology different disciplines? Perhaps all are included in the disciplines of social relations or social sciences? Is education a discipline? The "powerful norms" can occur before we have a multi-disciplinary approach within a department? Surely an analytical chapter with an examination of the remarkably varied pursuits that pass as disciplines within universities should have guided this first section?

It is curious for me to remark on this critical plane throughout the review. The book was clearly intended for an American audience and the writers of the case studies could depend on their cultural shorthand making sense in this context. Much of the apparent unevenness could derive from this. It is useful for academics to know what is going on in other institutions especially in an area as fundamental as the academic organization of universities. The authors point to the limitations of organization and structure; and point to the importance of groups of occasions working together in mutual understanding, whether in departments or in another basis. Some of the possible alternatives are described and the problem-based departments of Green Bay can be compared with the school organization of Homestead College. The matrix organization of Santa Cruz does seem to balance discipline and college in creative tension. The book gives a balanced presentation of the departmental and the alternative. However, if this book accurately represents the state of knowledge in this field then it points to the need for a more systematic and disciplined study of the academic organization of our institutions of higher education.

Colin Lacey

## A landmark in educational thinking

The Process of Education  
by Jerome Bruner  
Harvard University Press, £4.20 and £1.60  
ISBN 0 674 71002 9 and 71001 1

To be invited to review a book 18 years after its publication is an unusual request, but then this is an unusual book. It is based upon a meeting held in 1959 the purpose of which was to examine the fundamental processes involved in giving young students "... a sense of the substance and method of science."

There is an air of confidence about the book, dissatisfaction may have been felt in 1959 but the problems were intractable and we were "on the way". Now almost 20 years later, when the British Prime Minister has judged it necessary to consider the state of our education, it is time to ask: Did this group fail in their task? Have circumstances changed so very much, can it be that their message was ignored? The answer probably lies partly in all of these and more.

In 91 pages and six chapters Professor Bruner lays out what he saw as the principle features of 11 days of discussions among 30 distinguished scientists, scholars and educators. The introduction raises many issues: what shall we teach, what kinds of research would help in the design of curricula, what of the transfer of training, what does science involve and how does it differ from everyday poetry? And so the questions tumble out, one after the other.

The second chapter, which contains the main theme, emphasizes the importance of structure in knowledge and particularly in science, principles can be extracted and regularities discerned. In science there are many examples of where the structure of our knowledge and the utility of that structure are readily demonstrable, think of the impact of the theory of evolution on biology.

It might be argued, and correctly I think, that appreciating the importance of structure was not a blinding flash of insight on the part of the conference. A more significant question is perhaps how best to use structure in education. How can one best teach a child to organize his knowledge and link it to intellectual skills. The book hints at this issue but offers no prescription.

The third chapter opens with a hypothesis which may be surprising to many and which has certainly been misunderstood by some. Bruner asserts that any subject can be taught in some intellectually honest fashion to any child at any stage of development. This might seem like a bold claim, but it is not. It is a six year old? But Bruner's point is more subtle. By using the child's existing modes of thinking, by matching the problem to the learner's capacities a step can be made towards some more distant symbolic process.

From a brief outline of Piaget's stages of cognitive growth Bruner goes on to consider the notion of readiness for learning and points to the need for devising means of teaching which are within the capabilities of the child's level of cognitive development. The basic principles involved in mathematics are accessible to young children given that they are presented in a manner which the child can understand and handle himself. From a consideration of mathematics Bruner goes on to suggest that a comparable approach can be taken to the teaching of the humanities and literature. He argues persuasively but I am not wholly convinced. Occasionally we hear of teaching in mathematics, music and chess but I have not heard of a child prodigy in history, politics or poetry; perhaps there is something fundamentally different about the nature of knowledge in mathematics and science compared to literature and the social sciences.

Chapter five deals with intuitive and analytic thinking, both are clearly important but has the former been sacrificed for the latter in our educational system? The answer is probably, and a good reason made out for encouraging children to think intuitively, even though this involves risks. In many respects this chapter is the most exciting in the book and it merits careful reading, rereading and reflection.

Chapter five considers ourselves for learning, they are many and they may often be idiosyncratic. The notion that teaching like the army must proceed in the speed of the average individual is rightly questioned. The task is seen as one of devising materials which challenge the outstanding student while Bruner may be able to call together another group 20 years on to continue the task we well begun at Woods Hole in 1959.

Kevin Connolly

## Standing firm against the Chomskyan torrents

Chomsky (second edition)  
by John Lyons  
Harvester Press, £5.50  
ISBN 0 85527 690 8

Semantics 2  
by John Lyons  
Cambridge University Press, £15.00  
and £4.95  
ISBN 0 521 21560 9 and 29186 0

Many of those swept away by the great torrent of Chomskyan linguistics now find themselves heached while watching the sky for signs of a new weather that might carry them back into the theoretical mainstream. Not everyone, as swept away: some stood firm on traditional ground, while others built and shored up positions that can now be seen more clearly as the waters recede.

John Lyons first obtained a wide audience with his *Introduction to Theoretical Linguistics* (1968). It was, in some ways a traditional work: sensitive to empirical studies, broad areas of agreement rather than disputes, and to distinctions made within many theoretical frame-

works. It was encyclopaedic in scope and, above all, local and reliable. All this made the book stand out because, along with the excitement of the Chomskyan years, many linguistics had shrunk from consideration of a highly diverse aspect of human culture to a private squabble in which obscure puns were settled by loud claims about the primacy of one's own Brooklyn dialect.

He then wrote *Chomsky for the Funtana Modica Masters Series*, a brief introduction to transformational grammar (TG) and the principles underlying it. At the time this book (1970) it must have seemed that its emphasis was not where Chomskyan would have put it, for very little of it was devoted to detailed application of the notation. This new hardback edition has been brought up to date with a chapter on the counter-Chomskyan trends that have emerged since 1970. Lyons has enlarged other chapters and added an appendix that gives more details of the formalism. The book remains an excellent introduction, and what stands out

is how right his original judgment was—that that plan to prove at last, because, along with the excitement of the Chomskyan years, many linguistics had shrunk from consideration of a highly diverse aspect of human culture to a private squabble in which obscure puns were settled by loud claims about the primacy of one's own Brooklyn dialect.

Volume two of Lyons's monumental *Semantics*—beginning, he tells us, as "a fairly short one-volume introduction"—is in some ways a return to the encyclopaedic style of the 1968 introduction. The two volumes can be read independently. The first treats of logic in the narrow sense, of semantics and structural semantics. The second is "concerned with semantics from a fairly narrowly linguistic point of view", and yields sections on grammar, the structure of the lexicon, speech acts, deixis and modality.

This description of the second volume is correct in that TG does provide much of the vocabulary for the first two topics in the book, but the book as a whole does not seem to me to support his claim that work the validity of transformational grammar. No use is made

of its formalism and much space is given to supporting philosophical positions alien to TG, such as the truth-conditional view of meaning. More important, the most interesting and original sections cut at the root of TG, as when Lyons presents the Firthian view that corrigibility of a form, such as "I went home" to another, "I went home" is the intuitive basis of ungrammaticality, rather than the degradable property of sentences required by TG. It may be that Lyons assumes TG only in the sense that he declines to have the book on what would be, for him, an intellectually unprofitable confrontation.

When whole schools like generative semantics have to be discussed in five pages, one great depth can find points to dispute as when Lyons dismisses semantic representations, built from sense components, on the ground that they have to be explained, such notions as synonymy and antonymity. But, no explanation of these concepts, given in any other terms (except

for behavioural explanations, Lyons himself discounts to a great extent). Semantically, Lyons's sense-components are not different from others which he accepts as ontological underpinnings for parts of speech.

But these are small points compared with the wealth of the volume and the skill with which Lyons integrates the whole work, particularly the most original and most original parts of speech, deixis, speech acts and locution. Lyons makes clear that a Lyons of the linguistic universe is a Lyons of a great deal of material relevant to the thinking of the linguist. Lyons's book is a masterpiece of scholarship and scholarship. Yet he has not derived that vital quality, the quality of a great deal of material relevant to the thinking of the linguist. Lyons's book is a masterpiece of scholarship and scholarship. Yet he has not derived that vital quality, the quality of a great deal of material relevant to the thinking of the linguist.

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## Peace offerings

The Correspondence of Isaac Newton, Volume 7, edited by A. R. Hall and F. Tilling. Cambridge University Press, £30.00 ISBN 0 521 08722 8

The last nine years of Newton's life were marked by increasing physical discomfort and illness; so much so that at 83, in 1725, he moved, as Stirling says, "a little way off in the country. I go frequently to see him, and find him extremely kind and serviceable in everything I desire but he is much failed and not able to do as he had done."

Although the creative days were long past, and it turned out that the *Opticks* (though he delegated very little of his responsibility there), the clarity of his thought did not suffer. The letters of his closing years differ in frequency more than lucidity from the earlier ones. So the pleasure at the termination of this great series of Newton correspondence is not greatly marred by sadness or the effect of passing years. This volume, like its predecessors, is splendidly produced and edited most fully: the three Hall and Tilling volumes will match the earlier Turnbull and Scott ones.

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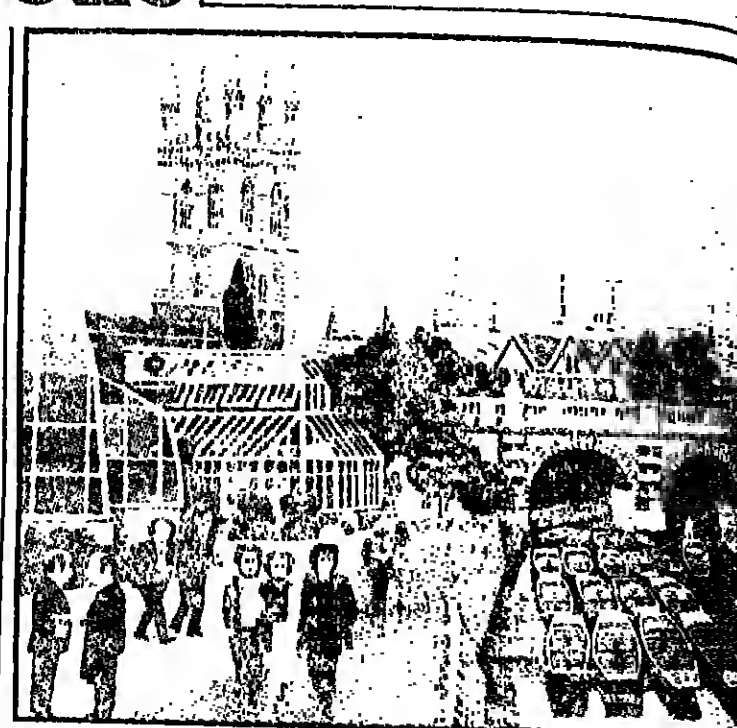
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## BOOKS



Magdalen Bridge, Oxford, by Alfred Daniels, is one of many delightful illustrations from *Twentieth Century British Novelists* and *Twentieth Century British Novelists* by Eric Lister and Sheldon Williams, published by Aris and Elgar Ltd. £8.95.

## Drawing the line

Boolean-Valued Models and Their Application to Set Theory, by J. G. Bell. Oxford University Press, £24.75 ISBN 0 19 551162 1

No formal axiomatic theory can capture all mathematical truths. Mathematicians have known this ever since Gödel proved his famous incompleteness theorems in the early 1930s. When Gödel's methods are applied to a single system, like that of arithmetic, the result is a formal, undecidable proposition, which, though expressible in the language of the theory, are neither provable nor refutable from its axioms. But, mathematically, undecidable propositions would not come under consideration in the ordinary course of events.

In 1963, Paul Cohen gave the first, and still the most important, example of a natural problem which cannot be settled on the basis of the currently accepted axioms of set theory. The problem in question is the continuum problem: how many points are there on a line? Some of the greatest mathematicians of the past 100 years, Cantor and Hilbert among them, have tried, unsuccessfully, to answer this question. Cohen has given us the answer for all of these failures.

Bell's book presents Cohen's results by proving them using the method of Boolean-valued models developed by Solovay, Scott and others. The book is intended primarily as a textbook for a postgraduate or advanced undergraduate course. But the general reader who has some knowledge of mathematical logic and results and methods are all along will find it particularly the exposition in chapters one and two, most

helpful. Some knowledge of set theory, of the Zermelo-Fraenkel axioms, would be useful here. Familiar with the notion of a countable set, would also help, but is not necessary. The book is a primary text in the continuum problem.

The first two chapters contain the basic material of the theory. The third chapter contains a detailed exposition of the method of Boolean-valued models, and the fourth chapter contains a detailed exposition of the method of Boolean-valued models, and the fifth chapter contains a detailed exposition of the method of Boolean-valued models.

The book includes also some 50 or so undated letters and 100 pages of additional and corrections to earlier volumes, together with some details of Newton's genealogy.

C. W. Kilmister

Reassessing a prophet of the computer age

The Mathematical Work of Charles Babbage, by J. M. Dobbey. Cambridge University Press, £12.50 ISBN 0 521 21649 4

Charles Babbage died in 1871 in his eightieth year (but see later). For the next 75 years he was largely forgotten; then, with the advent of the electronic computer, he was acclaimed as a major prophet of the new computer age. Now Dr Dobbey proposes a reassessment based on the proposal that Babbage was primarily a mathematician.

Babbage was born on December 26, 1791 or 1792, or either London or Totnes—there is some doubt on both counts. He entered Trinity College in 1810; he took his BA and a MA in 1814. In 1812 he founded the Analytical Society in reforming the teaching of mathematics at

Cambridge. In 1815 he moved to fashionable London where he lived for the rest of his life—including 18 years as a Cambridge professor.

Babbage's mathematical researches were compressed into eight years: from 1813 to 1821, by which time he had embarked on what proved to be his life work—the invention, design and partial manufacture of his calculating engines. Of five books (two unpublished) and 19 papers and articles, his major work, the main ideas were presented in two long papers in the *Philosophical Transactions*, 1815 and 1816. Babbage regarded the subject matter as the general branch of mathematics then existing, its flavour may perhaps be conveyed by the following first problem. This is to find the general function  $f(x)$  which satisfies the relation  $f(x) = f(x+1)$ , where

$p(x)$  is a given function. Thus if  $p(x) = x$ , we obtain  $f(x) = x(x+1)$ , where  $g$  is any function. From such simple beginnings, Babbage is able, by ingenious techniques and generalizations, to develop a systematic variety of problems.

"The Philosophy of Analysis" is the title of a set of unpublished essays in which Babbage attempts, largely by means of examples, to examine how mathematical discoveries are actually made. Although the essays are of uneven quality, some are highly original.

Dr Dobbey also has chapters on "British mathematics, 1800-1830", "The Analytical Society", and "Notation". His longest chapter gives a fascinating account of Babbage and his computers.

How should we assess Babbage's contribution to mathematics? The direct impact of his researches was negligible; his most important work was largely forgotten. His influence must be sought rather in terms of reform and organization. Among much else, he played a notable part in bringing British mathematics to the state of its modernity. Although Babbage's mathematical life ended at the age of 30, thereafter he applied his mathematical training to the solution of a wide variety of non-mathematical problems. To some, indeed, he is a founding father, not only of the computer, but of operational research and systems analysis as well.

It is a pleasure to commend this excellent book. We are much indebted to Dr Dobbey for his scholarly critique of this versatile genius. The book's printing and layout maintain the high standards we come to expect of its publisher.

Stuart Hollingdale

## BOOKS

## Unravelling the fictional webs of a Latin American master

Paper Tigers: The Ideal Fictions of Jorge Luis Borges, by John Sturrock. Clarendon Press: Oxford University Press, £5.95 ISBN 0 19 815746 0

The Emergence of the Latin American Novel, by Gordon Brotherston. Clarendon University Press, £6.50 ISBN 0 521 21478 5

These two studies have little in common. Mr Sturrock provides an intensive argument about one writer, Jorge Luis Borges, concentrating on two collections of what Borges calls his "fictions" (*Ficciones* and *The Aleph*), while Dr Brotherston envisages Latin American literature on a grand scale, attempting to characterize the Latin American novel as a continental phenomenon. Comparing the two, there is little doubt that Sturrock's outlook yields greater benefits.

In his first chapter, Brotherston presents the development of the Latin American novel, which is sup-

posedly one of progression, largely without external influences, from the early assertion of the "civilized" European values of the implanted city to a contemporary interest in the autochthonous. Brotherston would illustrate the initial urban emphasis, and incidentally try to present us "Latin American" the disparate traditions of Brazil and Spanish America, with the Argentinian D. F. Sarmiento's *Facundo: Civilization and Barbarism* (1845) and the Brazilian Euclides de Cunha's *Rebellion in the Backlands* (1902), despite the many years between the two. However, Brotherston seems unaware that in no way does Cunha see the city as a repository of civilization, and he underestimates Sarmiento's obvious fascination with the "savages".

Subsequently, writers are sold to begin to entertain doubts about the city, including the only novelist of the nineteenth century known outside the continent; but few readers of Machado de Assis, whose major novels were written before Cunha's work, would so easily call him a realist, a city-bound novelist

with consequent social or political implications. In no way joining the ranks of Sturrock's account of Borges's "fictions" reveals both the complications and a single-minded purpose behind these tales. The fictions are short stories, usually of a markedly fantastic nature, with no intention of painting a scene or depicting a character for the sake of it; they are rigorously composed tales which often end by denying all the assumptions they earlier invited the reader to make. They are all too easily interpreted as philosophy, far they do ask questions: what is individual identity? What is reality? What is truth? Is time linear or cyclical? Is there a God? Could there be a God? Such philosophical emphasis in many writings on Borges is misguided: he never shares concerns that are traditionally the preserve of the philosophers, but he explores them by use of the fiction of literature, using its suggestive power and involvement of the reader for his own purposes. The stories are written in a spirit of criticism of all the common assumptions of men and boys living: they offer no alternative, only the positive quality of doubt.

Sturrock's closely argued study of Borges reaps great rewards. Where-

as much of the criticism on Borges cultivates complication for his own sake, Sturrock's account of Borges's "fictions" reveals both the complications and a single-minded purpose behind these tales. The fictions are short stories, usually of a markedly fantastic nature, with no intention of painting a scene or depicting a character for the sake of it; they are rigorously composed tales which often end by denying all the assumptions they earlier invited the reader to make. They are all too easily interpreted as philosophy, far they do ask questions: what is individual identity? What is reality? What is truth? Is time linear or cyclical? Is there a God? Could there be a God? Such philosophical emphasis in many writings on Borges is misguided: he never shares concerns that are traditionally the preserve of the philosophers, but he explores them by use of the fiction of literature, using its suggestive power and involvement of the reader for his own purposes. The stories are written in a spirit of criticism of all the common assumptions of men and boys living: they offer no alternative, only the positive quality of doubt.

Sturrock's originality is to reveal Borges's fictions as exemplars of

the processes of creation, representation and imitation which occur in fiction. Borges is viewed not as a philosopher, but as a literary critic. In *Emma Zola*, for example, Emma Zola is a fictional character, a fully conceived father by killing the real culprit; she allows a sailor to violate her to make it appear that the guilty man raped her, so justifying her "self-defence". A traditional interpretation of the story would say that it asks about the nature of truth. Sturrock describes the cunning Emma as "an initiate into the rules of fiction, with something yet to learn about them"; yet in full control of her art, in a story which Sturrock persuasively argues is full of fictive motifs.

Despite Sturrock's skill, there is that some of his explanations are "much less convincing" than the stories he examines. Some will not convince; amid many accounts of some stories, he constructs, but to construct even, some possible rather than probable interpretations. The strength of the general thesis is that it holds. In the process it illuminates much of Borges's mathematical writing.

John Kinnear

## Happily ever after?

Tragedy in the Victorian Novel: Theory and Practice in the novels of George Eliot, Thomas Hardy and Henry James, by Jeannette King. Cambridge University Press, £6.95 ISBN 0 521 21670 2

Happy endings in Victorian novels frequently require a little of the old *Black Swan* is one example, Jane Eyre is another. Fulfillment for the chosen characters excludes too much of our remembered experience while reading to be satisfying. The emotional satisfaction of the novel is not the same as the satisfaction of the real world, and the emotional satisfaction of the novel is not the same as the satisfaction of the real world.

Earlier Victorian fiction usually acknowledges individual tragedy without permitting it to dominate the form of the novel. House continues after Lady Dedlock dies, and in *Villiers* averted a text as *Villiers* reveals with mordant pleasure that the individual survives tragic experience. It does so as much through its retrospective first person form as through its action. Wuthering Heights is a novel of the Victorian novel, and the Victorian novel is a novel of the Victorian novel.

It is therefore perhaps not surprising that although Dr King calls her book *Tragedy in the Victorian Novel*, her three chosen authors are all from the later part of the century. She does not attempt any discussion of earlier Victorian fiction. A particular limitation of the book is that it does not discuss the concept of tragedy in King's community.

Although this book is not the wide-ranging, forceful piece of work that the title suggests, and indeed requires, it is nevertheless both useful and intelligent on a narrower front and may be of help to undergraduates in particular, if they take the questions it raises and the insights it offers as starting points for inquiry.

Gillian Beer

This week's reviewers

Gillian Beer is a fellow of Girton College, Cambridge and author of *Romance: The Victorian Novel*. Bernard Benstock is visiting professor at Reading University. His book *Uncovering the Victorian Novel* was published last year. Kevin Connolly is professor of psychology at Sheffield University. A. H. Hays, professor of social administration at Oxford, delivered this year's Ruth lectures.

There is a 20-page chapter entitled "The Tragic Philosophy: Determinism and Free Will". This chapter alludes to Nietzsche and gives sentences to Darwin. The rest of the commentary is a humanistic moral comparison of the activity of her chosen novelists.

Some of what King says and inquires is held in discriminating but her method frequently blurs the distinctions between what she thinks on her own account, what she inquires to her chosen authors, and what she can demonstrate from their practice.

How far, in fact, can any act be free, and how effective can it be? No action is free in the sense that it is uncaused, but if the individual is aware of such causes, he can attempt to resist his own inner motives. He can act rationally, rather than irrationally. For a cause is not a compulsion. Whichever emotionally influences his environment for his failures is providing excuses rather than explanations; the environment is likely to be a cause, but it is not compulsion. As George Eliot puts it, "it always remains true that if we had been greater, circumstances would have been less strong against us".

In this passage there is an unremarked movement from King's own rationalistic stance ("He can act rationally...") through a Victorian self



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## Universities



**AUSTRALIA**  
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**CHAIR OF VETERINARY PHYSIOLOGY**  
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**LECTURER IN MATHEMATICAL STATISTICS**  
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## UNIVERSITY COLLEGE, BOTSWANA

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## Universities continued

### UNIVERSITY OF EAST ANGLIA NORWICH

Applications are invited for four LECTURESHIPS

In Development Studies in the School of Development Studies in the following fields:

**Social Change**  
Applications are invited from candidates with strong academic qualifications in the social sciences and preferably with experience in research and/or consultancy. The successful candidate will be capable of teaching social planning as well as contributing to other courses in the School. The successful candidate will be expected to have a high degree of research and teaching ability, and to be able to attract research funds. Applications should be sent to the Registrar, University of East Anglia, Norwich, NR4 7TJ.

**Comparative Political Development**  
For this post, a candidate is sought with interests in the theory of the State and political development (at local as well as national and supranational levels), with particular reference to European expansion in the 19th and 20th centuries and contemporary post-colonial studies. Experience in research or consultancy or advisory work in less developed countries is an advantage, and candidates should have an interest in the practical application of their subject to the problems of development. The successful candidate will be expected to participate in the interdisciplinary teaching of the compulsory courses in the first and second years of the B.A. as well as in the more specialist, optional courses in political development and in other subjects in the second and third years.

**Economic Development**  
Applications are invited from candidates in all fields of economics, although preference may be given to individuals with an interest in the analysis of state intervention and public policy including the analysis of fiscal and monetary policy. The teaching of the School is within an interdisciplinary framework and the successful candidate will be expected to be involved in the teaching of interdisciplinary courses, as well as of economics.

**Agricultural and Natural Resources Development**  
Candidates should have either a first degree in Agriculture, Forestry, Geography or Applied Sciences with a post-graduate qualification or equivalent experience in agricultural economics or resource management, or a first degree in Economics with a post-graduate qualification in agricultural economics or natural-resources evaluation and management. Wide experience in the appraisal and evaluation of farm systems and/or land and water resource development projects in the Third World countries is very desirable. The appointee will be expected to teach principles of natural resource development, part of the interdisciplinary principles programme and natural resource management in the undergraduate teaching programme, and to make a contribution to the development of a new professional course leading to the M.A. in Rural Development. The successful candidate will become members of the Overseas Development Group and may expect to spend up to one third of their time on externally financed projects, usually overseas.

Salary will initially be within the range £3,333 to £4,190 (although in exceptional circumstances an appointment may be made beyond this point) on the Lecturer scale £3,333 to £5,655 (under review) plus FRSU/US benefits. Applications (one copy only) giving full particulars of age, qualifications and experience, together with names and addresses of three persons to whom references may be made, should be lodged with the Establishment Officer, University of East Anglia, Norwich NR4 7TJ, from whom further particulars may be obtained. Applications should be sent to the Registrar, University of East Anglia, Norwich NR4 7TJ, by 1 April 1978. The forms of application are issued in naming three referees who are requested to give only the names of those who can immediately be approached by the University.

### BELFAST The Queen's University TWO NEW POSTS IN MUSIC

#### COMPOSER-IN-RESIDENCE

Applications are invited from composers for the post of Composer-in-Residence, funded jointly by the Arts Council of Northern Ireland and the University. The appointing Committee will also consider the names of established composers who are brought to its attention. The post, which will be attached to the Department of Music, is for one year in the first instance but may be renewed annually for a maximum of three years. The salary is £4,000 per annum and the successful applicant will be expected to take up post in September or October.

#### LECTURESHIP IN MUSIC

A lectureship in the Department of Music is available from October 1, 1978 or such other date as may be arranged. The holder of the Music Department at present consists of one professor, one senior lecturer, two lecturers, and several part-time lecturers. Initial planning, which will depend on age, experience and qualifications, will be made at one of the first three terms on the scale under review for lecturers: £3,333 to £5,655, with FRSU/US benefits. The successful candidate will be expected to have a high degree of research and teaching ability, and to be able to attract research funds. Applications should be sent to the Registrar, University of East Anglia, Norwich, NR4 7TJ, by 1 April 1978. The forms of application are issued in naming three referees who are requested to give only the names of those who can immediately be approached by the University.

### UNIVERSITY COLLEGE DUBLIN

Applications are invited by the Governing Body of the College for the following full-time statutory post which will become vacant in October, 1978.

#### Professorship of French

Prior to application, further information (including up-to-date prospectus) should be obtained from Mr. P. MacLellan, Secretary and Bursar, University College, Dublin 4, Tel. 691244 Ext. 431.

THE LATEST DATE FOR RECEIPT OF COMPLETED APPLICATIONS IS THURSDAY, 13th APRIL, 1978.

### UNIVERSITY OF SYDNEY

**LECTURESHIP/RESEARCH FELLOWSHIP IN MECHANICAL ENGINEERING**  
The appointment is for a fixed term of three years. Applicants should have a high degree of research and teaching ability, and to be able to attract research funds. Applications should be sent to the Registrar, University of Sydney, Sydney, N.S.W. 2006, Australia.

### UNIVERSITY OF CAMBRIDGE

Applications are invited for a UNIVERSITY ASSISTANT LECTURESHIP IN GERMAN. The successful candidate will be expected to have a high degree of research and teaching ability, and to be able to attract research funds. Applications should be sent to the Registrar, University of Cambridge, Cambridge, CB2 3RQ.

### UNIVERSITY OF MELBOURNE

**RESEARCH FELLOWSHIP IN TRANSPORT ENGINEERING**  
The successful candidate will be expected to have a high degree of research and teaching ability, and to be able to attract research funds. Applications should be sent to the Registrar, University of Melbourne, Melbourne, VIC 3010, Australia.

### UNIVERSITY OF MALAWI

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### NATIONAL UNIVERSITY OF LESOTHO

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**Polytechnics continued**

**KINGSTON POLYTECHNIC**  
**Gipsy Hill Centre**  
**LECTURER II/SENIOR**  
**LECTURER in MUSIC**  
Applications are invited from musicians, preferably with a higher degree and school experience, to join a full-time staff of music in the expanding Music Centre. The successful candidate will be expected to share the teaching of degree level of music, composition, orchestration and general musicianship and to take over the Music Centre.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Brighton Polytechnic**  
**FACULTY OF ENGINEERING AND ENVIRONMENTAL STUDIES**  
**Head of Department of Building**  
**£7,887-£8,680**  
Professional and academic experience essential of a level commensurate with developing a U.S.C. (Honours) course in Building and promoting relevant research projects.  
Application forms and further details from Personnel Officer, Brighton Polytechnic, College Campus, Brighton BN2 4QJ, Tel. 02323 68195 Ext. 2537. Closing date 20 April 1978.

**LONDON**  
**THE POLYTECHNIC OF MANAGEMENT**  
Department of Public Management  
**LECTURER IN ACCOUNTING**  
Part-time Lecturer in Accounting, commencing in April 1978, to teach the part-time evening class in Accounting. The successful candidate will be expected to share the teaching of degree level of accounting and to take over the Accounting Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**MANCHESTER**  
**THE POLYTECHNIC OF MANAGEMENT**  
Department of Public Management  
**LECTURER IN ACCOUNTING**  
Part-time Lecturer in Accounting, commencing in April 1978, to teach the part-time evening class in Accounting. The successful candidate will be expected to share the teaching of degree level of accounting and to take over the Accounting Centre.  
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**MANCHESTER**  
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Part-time Lecturer in Accounting, commencing in April 1978, to teach the part-time evening class in Accounting. The successful candidate will be expected to share the teaching of degree level of accounting and to take over the Accounting Centre.  
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**COVENTRY**  
**LANCHESTER POLYTECHNIC**  
**DEPARTMENT OF ART AND DESIGN**  
**LECTURER II/SENIOR**  
**LECTURER in MUSIC**  
Applications are invited from musicians, preferably with a higher degree and school experience, to join a full-time staff of music in the expanding Music Centre. The successful candidate will be expected to share the teaching of degree level of music, composition, orchestration and general musicianship and to take over the Music Centre.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**LIVERPOOL**  
**THE POLYTECHNIC OF MANAGEMENT**  
Department of Public Management  
**LECTURER IN ACCOUNTING**  
Part-time Lecturer in Accounting, commencing in April 1978, to teach the part-time evening class in Accounting. The successful candidate will be expected to share the teaching of degree level of accounting and to take over the Accounting Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**PORTSMOUTH**  
**THE POLYTECHNIC OF MANAGEMENT**  
Department of Public Management  
**LECTURER IN ACCOUNTING**  
Part-time Lecturer in Accounting, commencing in April 1978, to teach the part-time evening class in Accounting. The successful candidate will be expected to share the teaching of degree level of accounting and to take over the Accounting Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**KENT**  
**THE POLYTECHNIC OF MANAGEMENT**  
Department of Public Management  
**LECTURER IN ACCOUNTING**  
Part-time Lecturer in Accounting, commencing in April 1978, to teach the part-time evening class in Accounting. The successful candidate will be expected to share the teaching of degree level of accounting and to take over the Accounting Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges and Institutes of Technology**  
**DUNDEE COLLEGE OF TECHNOLOGY**  
**DEPARTMENT OF MATHEMATICS & COMPUTER STUDIES**  
**SENIOR LECTURESHIP IN STATISTICS**  
**LECTURESHIP IN STATISTICS**  
The successful candidate for the Senior Lectureship will have a PhD in Statistics and will be expected to share the teaching of degree level of statistics and to take over the Statistics Centre.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges and Departments of Art**  
**DUNCAN OF JORDANSTONE**  
**COLLEGE OF ART**  
**Perth Road, DUNDEE**  
Applications are invited for the post of **HEAD of Design School**  
The School is responsible for the following SNAA (Honours and Unclassified Degree Courses):  
(i) Graphic Design  
(ii) Illustration and Printmaking  
(iii) Textile Design  
(iv) Jewellery and Silversmithing  
(v) Ceramics  
(vi) Product Design  
The person appointed will be expected to have appropriate administrative and professional ability, to be a member of the Design Council and to be a member of the Design Council of Scotland.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges of Higher Education**  
**Gwent college of higher education**  
**Senior Lecturer/**  
**Course Director in Fashion**  
Salary: £5,523-£6,457 (Progression by two increments to £6,959, subject to standard of work)  
A very special person is being sought for the position of Senior Lecturer in Fashion at the Gwent College of Higher Education. The successful candidate will be expected to share the teaching of degree level of fashion and to take over the Fashion Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**PADGATE COLLEGE OF HIGHER EDUCATION**  
**LECTURER II**  
In Audio-Visual Communication/Educational Technology  
Applications are invited for the post of Lecturer II in Audio-Visual Communication/Educational Technology. The successful candidate will be expected to share the teaching of degree level of audio-visual communication and to take over the Audio-Visual Communication Centre.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges of Higher Education continued**  
**Buckinghamshire College of Higher Education**  
Queen Alexandra Road, High Wycombe, Bucks.  
Director: D. J. Everett, B.A., F.F.T.Com.  
**School of Management Studies and Languages**  
Applications are invited for the following posts, duties to commence as soon as possible:  
**Senior Lecturer in Law**  
Candidates (male or female) for this post should be graduates in Law and able to assist in the development of a CNA degree in European Business Studies. Candidates should have experience of teaching at degree level.  
**Senior Lecturer in Accounting & Finance**  
Candidates (male or female) for this post should be qualified accountants and able to contribute to the development of a CNA degree in European Business Studies. Experience of teaching at degree level is essential and preference will be given to candidates with industrial experience.  
Salary Scale: £5,523-£6,457 per annum.  
Application form and further details for these posts are available from the Assistant Director, to whom completed forms should be returned as quickly as possible. Tel. No.: High Wycombe 22141.

**TORRENS COLLEGE OF ADVANCED EDUCATION**  
Torrens College of Advanced Education is a multi-disciplinary college offering a wide range of courses in the fields of Education, Health, Social Work, and the Arts.  
**LECTURER IN CELLO**  
**LECTURER IN VIOLA**  
Applications are invited for the posts of Lecturer in Cello and Lecturer in Viola. The successful candidates will be expected to share the teaching of degree level of cello and viola and to take over the Cello and Viola Centres.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges of Higher Education**  
**Gwent college of higher education**  
**Senior Lecturer/**  
**Course Director in Fashion**  
Salary: £5,523-£6,457 (Progression by two increments to £6,959, subject to standard of work)  
A very special person is being sought for the position of Senior Lecturer in Fashion at the Gwent College of Higher Education. The successful candidate will be expected to share the teaching of degree level of fashion and to take over the Fashion Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges of Higher Education**  
**Gwent college of higher education**  
**Senior Lecturer/**  
**Course Director in Fashion**  
Salary: £5,523-£6,457 (Progression by two increments to £6,959, subject to standard of work)  
A very special person is being sought for the position of Senior Lecturer in Fashion at the Gwent College of Higher Education. The successful candidate will be expected to share the teaching of degree level of fashion and to take over the Fashion Centre.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges of Further Education**  
**REDDITCH COLLEGE OF FURTHER EDUCATION**  
Appointments wanted  
Highly qualified university lecturers in English and Social Studies, to teach at the college. The successful candidates will be expected to share the teaching of degree level of English and Social Studies and to take over the English and Social Studies Centres.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Colleges of Further Education**  
**REDDITCH COLLEGE OF FURTHER EDUCATION**  
Appointments wanted  
Highly qualified university lecturers in English and Social Studies, to teach at the college. The successful candidates will be expected to share the teaching of degree level of English and Social Studies and to take over the English and Social Studies Centres.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
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**Colleges of Further Education**  
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**Colleges of Further Education**  
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Appointments wanted  
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Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

**Norwich City College**  
of Further and Higher Education  
Ref. HC1 HEAD OF DEPARTMENT OF HEALTH & COMMUNITY STUDIES (Grade VI)  
Ref. HL1 HEAD OF DEPARTMENT OF HUMANITIES & LANGUAGES (Grade VI)  
These are two new departments envisaged upon the reorganisation of the college. The successful candidates will be expected to share the teaching of degree level of health and community studies and humanities and languages and to take over the Health and Community Studies and Humanities and Languages Centres.  
Salary range to include 1978 and 1977 supplements: £3,740-£6,000 plus London allowance £287.  
Further details and application forms (to be returned by 17th April) from Academic Registry Dept. AD, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames KT1 2EE. 01-840 1360.

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